CHARLES UNIVERSITY IN PRAGUE

Faculty of Science

Department of Demography and Geodemography

PhD study program

Mgr. Saule Dyussupova

IMPACT OF ETHNICITY ON RECENT FERTILITY CHANGE BY MARITAL STATUS IN KAZAKHSTAN

PhD dissertation

Tutor: Prof. RNDr. Jitka Rychtaříková, CSc.

Prague, 2011

Dedicated to my parents –

Khanshaym and Tuyakh

I declare that this dissertation is my own work under the supervisor of Prof. RNDr. Jitka Rychtaříková CSc. Where other sources of information have been used, they have been acknowledged.

I agree that if any results gained while working on this thesis will be used outside the Charles University in Prague, written permission of the University will be necessary.

I agree to lend this thesis for study reasons and agree that the thesis will be added to the borrower's database.

In Prague, 14.05.2011

Saule Dyussupova

Acknowledgements

I would like to open the first paper of my dissertation with the deepest expression of gratitude to all teachers for their time, patience, and hard work, to those who made my study at the Charles University in Prague successful, exciting and pleasant. It was an unforgettable experience. You were always there to help and share knowledge, skills and ideas with me.

My special words of appreciation go to my dear tutor **Prof. RNDr. Jitka Rychtaříková CSc,** whose high professionalism, dedication to her work, invaluable supervision, patience and encouragement motivated me to complete my research with great pleasure.

I would like to thank JSC **"Center for International Programs"** in Kazakhstan who gave me opportunity to study in Prague and **RNDr. Tomas Kucera CSc** who recommended me to study Demography at the Charles University in Prague and undertake this opportunity to open new experiences and prospects in my future career in Kazakhstan.

Many thanks to **RNDr. Květa Kalibová, CSc., RNDr. Jiřina Kocourková, PhD., RNDr. Ludmila Fialová, CSc., Boris Burcin, PhD** and **Martin Kucera** for their great personality and professionalism in their work.

I also would like to thank the Agency of Statistics of the Republic of Kazakhstan in Astana city which kindly provided me with statistical data.

I express my deepest gratitude to my friend **Sviatlana Skachykhina** who supported and helped me with the English grammar when I was working on this thesis.

I am grateful to all my relatives, friends for their support, kindness and friendship. Last but not least, I would like to thank my beloved family for their help, support and love.

Abstract

Contemporary Kazakhstan has experienced different social and political changes since becoming an independent country. These changes influenced demographic processes such as fertility. The number of live births per woman has altered, but what were the changes among ethnicities and what type of fertility (marital or extramarital) has changed more? At the same time, it is important to know whether changes in ethnic fertility behavior were the same or not in their historical country, and if there is some adaptation to local social environment. To answer these and other related questions more sizable ethnicities in Kazakhstan - Kazakhs, Russians, Ukrainians and Uzbeks were chosen for study. Despite the fact that the social-cultural attitudes of each ethnicity differ from each other, the trends of 'marital fertility' increased among all ethnicities and, in the case of 'extramarital fertility' decreased. Marriage plays a very important role in Kazakhstan and Uzbekistan and to a lesser degree in the Ukraine. The impact of ethnicity on fertility is an important factor in Kazakhstan, Uzbekistan and Ukraine. (Uzbekistan and Ukraine are taken as original countries of Uzbek and Ukrainian ethnicities.) It was shown that country and social environment play a significant role in fertility. Mixed-traditional Kazakhs, non-traditional Ukrainians display higher fertility in Uzbekistan compared to their co-ethnics in their original countries. Uzbek women with children in Uzbekistan did not report themselves as 'never married' mothers, whereas in Kazakhstan they experienced the fastest increase in the proportion of extramarital births.

After the stabilization of economic and political conditions in Kazakhstan the number of marital births increased in each ethnicity, however, Uzbeks showed the fastest growth in the proportion of extramarital births which were due to different external factors, more particularly to the increasing number of illegal immigrants from Uzbekistan not having official documents (including marriage certificate). Regional conditions and the social environment impacted on ethnic-fertility behavior: non-traditional ethnicities showed higher probabilities of having live births when living among traditional societies. Therefore, despite the fact that even women in traditional ethnicities gave births out of marriage in Kazakhstan, one can surely say that Kazakhstan still has kept a 'family oriented' kind of society.

Key words: *ethnicity, fertility, marital status, Kazakhstan, Uzbekistan, Ukraine, Kazakhs, Russians, Ukrainians, Uzbeks, traditional, non-traditional and mixed traditional.*

Resumé

Moderní Kazachstán zažil různé sociální a politické změny od doby získání státní nezávislosti. Tyto změny ovlivnily demografické procesy jako například porodnost. Číslo porodů na ženu se změnilo, ale jaké byly změny mezi národnostmi a jaký typ porodnosti (sňatkový nebo mimo sňatek) se změnil víc? Obdobně je důležité vědět jestli změny v chování národnostní porodnosti byly stejné či ne v jejich historických zemích původu, a jestli existuje určitá adaptace k místnímu sociálnímu prostředí. Pro získání odpovědi na tyto a další souvislé otázky byly prozkoumány nejpočetnější národnosti v Kazachstánu – Kazaši, Rusové, Ukrajinci a Uzbekové. Nehledě na to, že sociálně-kulturní postoje každé národnosti se od sebe liší, trendy sňatkové porodnosti se zvýšily u všech národností, a v případě porodnosti mimo sňatku se snížily. Sňatek hraje velice důležitou roli v Kazachstánu a Uzbekistánu a v menší míře v Ukrajině. Vliv národnosti na porodnost je značným faktorem v Kazachstánu, Uzbekistánu a Ukrajině. (Uzbekistán a Ukrajina jsou brány jako země původu uzbecké a ukrajinské národnosti.) Bylo ukázano, že země a sociální prostředí hrají významnou úlohu v porodnosti. Smíšeně-tradiční Kazaši, netradiční Ukrajinci vykazují větší porodnost v Uzbekistánu ve srovnání s jejich krajany v zemích původu. Uzbecké ženy s dětmi v Uzbekistánu si neukazaly jako 'nikdy nevdané' matky, když v Kazachstánu zažily velice rychlý růst v proporci porodů mino sňatku.

Po stabilizaci ekonomických a politických podmínek v Kazachstánu se zvýšilo číslo narození v sňatcích v každé národnosti, ale Uzbeci ukázali rychlejší růst v proporci narození mimo sňatku, což bylo ovlivněno různými vnějšími factory, konkrétně, na rostoucí číslo nelegálních migrantů z Uzbekistánu, nemajících oficiální doklady (i vysvědčení o sňatku). Regionální podmínky a sociální prostředí ovlivnily chování národnostní porodnosti: netradiční národnosti ukázaly vyšší rozdíl of živých porodů bydlíc v tradičních společnostech. Tím pádem, nehledě na to, že i ženy v tradičních společnostech rodí mimo sňatku v Kazachstánu, je možné bezpochyby tvrdit, že Kazachstán si doposud zachoval typ společnosti orientovaný na rodinu.

Klíčová slova: *národnost, porodnost, sňatkové postavení, Kazachstán, Uzbekistán, Ukrajina, Kazaši, Rusové, Uzbeci, tradiční, netradiční a smíšeně-tradiční.*

CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXES

I. INTRODUCTION

The topic of the dissertation is the impact of ethnicity on fertility change by marital status in Kazakhstan during the period 1996-2008. The Republic of Kazakhstan is one of the new independent and sovereign countries of Central Asia where more than 130 different ethnic groups live (www.akorda.kz), most of them are from the post-Soviet countries (see Annex 1). Due to the political and economic innovation during the Soviet period they moved to their current location in Kazakhstan. The multi-ethnicity of the country is one of the main demographic features of contemporary Kazakhstan. Despite the fact that each ethnicity differs in social attitudes, all of them display a dominant form of partnership – marital. The highest number of births was always observed in marriage, which can be explained by the fact that extramarital births were not supported by society, especially among traditional ethnic group such as Uzbeks. Nowadays, due to modernization, social opinions of individuals have radically altered, and brought such changes as co-habiting partners or, having a baby without any form of nuclear family, single women give birth more due to their independence and economic stability. However, traditionally oriented society also can be impacted by modernity as well. For example, women can give birth outside of marriage and report themselves as living together or being second wives (especially in peoples following Islam). It can be also associated with migratory factors, especially being illegal. All above-mentioned issued are analyzed in the dissertation thesis.

Due to poor availability of detailed statistical data in Kazakhstan, fertility by ethnicity and marital status is not analyzed in detail yet. Fortunately, some International survey organizations can provide data, which is very important for investigating demographic changes in all surveyed countries. Such an important organization is the Measure Demographic and Health Survey (DHS) project, which provides nationally representative data on fertility, family planning, maternal and child health, gender, HIV/AIDS, malaria, and nutrition. Based on the DHS data it was possible to analyze ethnic-fertility behavior in Kazakhstan, Uzbekistan and Ukraine. Surprisingly, Kazakh ethnicity showed higher fertility in Uzbekistan than in Kazakhstan, and an interesting point in Uzbekistan is that single women

with children do not report themselves as never being in a marriage. Changes in social-cultural behavior impacted upon fertility as well. Changing living place also has influences on fertility, for example moving from a non-traditional environment to more traditional societies can influence behavior. In general, ethnic impact on fertility plays an important role because of fertility orientation of ethnicity: some ethnicities pay more attention towards having more children in a family supposing that children can stabilize marriage, other ethnicities are concerned with having a male heir in the family.

Comparing ethnic fertility in different countries can give significant information about their fertility behavior. Lev Gumilyov (2005) has already closely correlated ethnogenesis with belonging to a particular ethnicity, in that case it is obvious that changing living place can influence the behavior of an ethnic group, especially on their fertility values.

1.2 Research purposes

The main goal of the research is to thoroughly investigate recent fertility change by ethnicity and marital status of women aged 15-49 in Kazakhstan. To achieve this goal two tasks were defined: first, to make a detailed investigation in trends of marital and extramarital fertility in Kazakhstan according to ethnicity during the period (1999-2008); and second, to make a country-comparative investigation in order to study differences in fertility by ethnicity, marital status, place of residence, educational attainment of chosen ethnic groups (Kazakhstan – 1999, Uzbekistan – 1996, Ukraine – 2007). Each sub-purposes has main features which are following:

First purpose's main features:

A. In the decade 1999-2008 increasing trends of fertility rates are related to two main reasons: the period of stabilization of the economy of Kazakhstan after the collapse of the Soviet Union and the period when the "wave of the children of the 1980s" children grew up and reached their peak of their reproduction ages under more favorable conditions in which to start family. Thus, the necessity arose to examine whether both changes affected the shares in marital and extramarital fertility of each selected ethnic group.

B. Socio-cultural attitudes in the country are very important for the examination of fertility levels and structures in different ethnic groups. For this purpose three types of societies will be considered: traditional, non-traditional and mixed-traditional.

The main features of Second purpose are:

A. Based on socio-cultural attitudes, traditional, non-traditional and mixed traditional marital statuses to distinguish: partners who live together and reported as co-habited partners in non-traditional ethnicity, whereas in traditional – as completed families just without legal registrations – to discuss about these differences.

B. To find out fertility differentiations in levels according to ethnicity, marital status, place of residence, educational attainment in Kazakhstan, Uzbekistan and Ukraine as a whole and each country separately by the way of modeling.

The research questions were derived in order to support the goal of the research. The questions will be followed by the research hypotheses.

1.3 Research questions

For achieving the main goal of the Dissertation, research questions were divided into two groups by the main features of purposes:

First group of research questions:

a. What changes took place in trends of marital and extramarital fertility in Kazakhstan in both urban and rural areas during the considered period from 1999 to 2008?
b. What was the relative share between marital and extramarital fertility among ethnic groups in Kazakhstan during the period 1999-2008?
c. In the given study what types of ethnicity changed more during the period 1999-2008: traditional or non traditional?
d. What were the intensities in marital fertility by age structure of each ethnicity?
e. What were the differences in marital and extramarital fertility between the ethnicities?
f. What were the factors behind the changing trends of marital and extramarital fertility according to ethnicity in Kazakhstan during the period 1999-2008?

Second group:

1.b What differences were there between specific birth orders in Kazakhstan, Uzbekistan and Ukraine by ethnicity, marital status, place of residence, and educational attainment based on national representative data of DHS (Demographic and Health Survey)?
2.b What was the age of respondents with children according to ethnicity in Kazakhstan – 1999, Uzbekistan – 1996 and Ukraine – 2007?
3.b What are the main features of interpretation of “Living together” and “Cohabitation” in non-traditional and traditional societies?
4.b According to DHS how should the relationship between country, ethnicity, marital status, place of residence and educational attainment factors be described?
5.b What is the nature of fertility behavior of ethnicities in their historical countries? Where more of live births are recorded – inside or outside of a historical country?
6.b Are there differences between non-traditional ethnicities such as Russians and Ukrainians and are there differences between mixed-traditional and traditional such as Kazakhs and Uzbeks?
7.b What is the fertility difference between those “never married” women in Kazakhstan, Uzbekistan and Ukraine?
8.b What are the fertility preferences according to ethnicity in general?

9.b What are variations of fertility by marital status in each of the selected countries?

1.4 Research hypotheses

As well as research questions the research hypotheses are also divided into two groups according to features of above mentioned purposes:

First group of research hypotheses:

1.a The levels of marital fertility in Kazakhstan decreased over time due to co-habitation partnerships becoming more popular in urban areas, because urban areas are usually more modern than the rural one.

2.a The shares in marital fertility decreased among ethnic groups due to the increasing numbers of extramarital births in Kazakhstan during the period 1999-2008.

3.a Traditional ethnic groups became more modern, and non-traditional showed stable trends in marital fertility during the considered period.

4.a Older aged married women recorded more births than younger aged women due to the postponement of childbearing.

5.a The differences in marital fertility of each ethnicity were not high while the differences in the frequency of extramarital births were most likely related to the stabilization of the economy and policy in Kazakhstan during the 1999-2008.

6.a The reasons for the changing trends of marital and extramarital fertility according to ethnicity depended on economic development and political stability in Kazakhstan during the period 1999-2008.

Second group of research hypotheses:

1.b Average birth order per woman in Kazakhstan, Uzbekistan and Ukraine is obviously distinguished by ethnicity, marital status, place of residence, and educational attainment due to different social, cultural, economic attributes of the selected countries.

2.b Mean age at childbearing of respondents is lower among traditional Uzbekistani society than in mixed and non-traditional ones.

3.b In a traditional society, a wedding ceremony is much more important than legal registration of marriage; such unions can be interpreted as “cohabited partnerships”, whereas in a non-traditional society cohabitation cannot mean marriage, it can be regarded as living together before marriage.

4.b Variations between countries, ethnicities, marital statuses, places of residence and educational attainments exist due to ethnic-cultural aspects. However, fertility differences across urban/rural areas and levels of education can be similar in the countries, whereas fertility differences by marital status can be significant.

5.b Kazakhs in Kazakhstan, Uzbeks in Uzbekistan, and Ukrainians in Ukraine were recorded to give more births in the home countries (a more comfortable place to give birth) than outside of it.

6.b Fertility patterns of Russians and Ukrainians do not differ because they are non-traditional ethnicities, whereas fertility patterns of Kazakhs and Uzbeks were found to show some differences because the representatives of Kazakh ethnicity have a more modern kind of view on family formation than representatives of Uzbek ethnicity.

7.b "Never married" women in Ukraine have the highest fertility compared to similar in Kazakhstan and Uzbekistan.

8.b Each ethnicity has its specific fertility preferences. However, traditional ethnicities do not differ from each other, and there is no difference between non-traditional as well.

9.b Marital status plays an important role in having children, however in Ukraine single women have higher fertility than in Kazakhstan and Uzbekistan.

1.5 Structure of the dissertation

This dissertation is structured into three sections and - Introduction and Conclusion. The introduction is presented in the first chapter and addresses the research purposes, questions, hypotheses and structure of the dissertation. Section I deals with theory, history and social policy and consists of four chapters (2-8): chapter 2 is about basic concepts, chapter 3 is on Historical background of ethnicities and has three paragraphs: 1) History of movement in Kazakhstan, 2) History of movement in Uzbekistan, and 3) History of movement in Ukraine. Chapter 4 addresses history of ethnic identification from the Soviet period to recent time. Chapter 5 discusses the history of marriage age and household, where two paragraphs concerned: 1) From the history of marriage age, and 2) Overview of household. Chapter 6 discusses general description of ethnicities (Kazakhs, Russians, Ukrainians and Uzbeks), social attitudes, and chapter 7 is about social policy related to fertility in Kazakhstan.

Section II is about marital and extramarital fertility according to ethnicity in Kazakhstan, which consists of two chapters (8-9): Chapter 8 is about Legislation, data, definitions and methods, where five paragraphs are concerned (Registration of births, Data processing, Data quality and availability, Definitions of used terms and Measurements) and Chapter 9 is about Marital and extramarital fertility changes according to ethnicity in Kazakhstan, where also five paragraphs are concerned as well (Patterns, Age-specific profiles, Differences in timing of childbearing, Peculiarities of extramarital fertility and Differences in marital and extramarital fertility and Main findings).

Section III addresses Fertility differentials by marital status and education according to ethnicity in Kazakhstan compared to Uzbekistan and Ukraine based on Demographic and Health Survey – DHS. It comprises three chapters (10-12). Chapter 10 describes Demographic and Health Surveys in Kazakhstan, Uzbekistan and Ukraine (Data description) and consists of five paragraphs: 1) Demographic and Health Surveys (the Measure DHS); 2) Kazakhstan Demographic and Health Survey, 1999 (KDHS); 3) Uzbekistan Demographic and Health Survey, 1996 (UZDHS); 4) Ukraine Demographic and Health Survey, 2007 (UKDHS); 5) Marital status of women. Chapter 11 contains descriptive findings of fertility behavior, where

following paragraphs are investigated 1) Birth order difference from regional perspectives; 2) Birth order difference according to marital status; 3) Birth order difference according to education; 4) Timing of childbearing; and 5) Variation in live and total birth orders. Chapter 12 deals with Factors impacting fertility from multidimensional perspectives and consists of six paragraphs: 1) Multinomial logistic regression; 2) Fertility preferences; 3) Country differentials in fertility factors; 4) Ethnic differences in fertility; 5) Country variations according to marital status; and 6) Main findings.

In addition, Annexes, References and Internet sources are included into the Dissertation.

SECTION I THEORY, HISTORY AND SOCIAL POLICY

CHAPTER 2. BASIC CONCEPTS

After the collapse of the USSR, all 15 newly emerged countries experienced socio-economic and cultural transformations. Changes in the political and economic spheres resulted in changing demographic attitudes in all post-Soviet countries. For example, Kazakhstan as well as Russia, Ukraine and Uzbekistan showed a decreasing trend of total fertility rate from 1988 to 1999. However, after 1999 fertility showed an increasing trend in Kazakhstan, which can be related to different factors such as stabilization of the economy of the country and the period when the "wave of the children of the 1980s" grew up and reached the peak of their reproduction ages in more favorable conditions to start family. Thus, the necessity arose to discuss about increasing trend of fertility in Kazakhstan. Despite the fact that fertility in Kazakhstan was analyzed by the staff of the Agency of Statistics of the country, deep theoretical investigations have not been discussed yet. Meanwhile in European countries discussion about fertility decline have taken "a high" position in a scientific area. Nevertheless a discussion about fertility decline is easier than to explain increasing fertility. The theories on fertility change of these countries must be considered first.

In demography fertility research, related to developed countries, currently involves two major theoretical perspectives: those that focus on ideational forces and those that focus on economic forces (Billigsley 2009). Lesthaeghe and van de Kaa's (1986) the Second Demographic Transition leads the ideational literature. Lesthaeghe and Surkyn (2004) argue that a desire for self-actualization has become predominant and was fuelled by three revolutions: 1) a contraceptive revolution, which permits postponement of childbearing; 2) a sexual revolution, which broke the boundaries that kept sexual activity within marriage; and 3) a gender revolution, which allowed women to no longer be subservient to men or their own biology. All three of these revolutions combined re-oriented values and were said to occur "during the peak years of economic growth". The Second Demographic Transition theory

dictates that families will gradually become smaller due to greater individualism and post-materialism, which are associated with increased urbanization and post-industrialization (Lesthaeghe and Surkyn 2004 in Billigsley 2009).

One of the most prominent in the economic discussion is Becker's (1960, 1981; Hotz et al. 1997 in Billigsley 2009) micro-economic theory of the family. The economic theory of fertility can be summarized as focusing on the costs of children, which are mediated by household income. Costs are considered both directly, in which the benefits of a child are weighed against the costs, and indirectly, which include costs related to lost opportunities. Not surprisingly, widespread economic deterioration during the transition from communism encouraged an intuition that the economic crisis might be related to declining fertility in the region. Indeed, researchers have paid explicit tribute to the transition experience by directly linking the post-communist transition and the correlated economic crisis to the decline in fertility. According to Billigsley (2009), Cornia and Paniccia found a relationship between economic conditions, as well as family related services and policies, and fertility for the early years of the transition. Their results confirm the importance of the loss of resources that was brought about by structural change. The UN Economic Commission (2000) for Europe found that the decline in income put downward pressure on fertility for ten post-communist countries from 1989 to 1998.

The transition from communism and capitalism brought up a lot of discussions related to fertility. Sobotka (2002) argues that the ''socialist greenhouse,'' which encompasses a broad range of socialist institutions from the labor market to family/work conciliation policies, artificially kept fertility rates high during the decades in which they would have declined, as in the case of Western Europe. Another valuable contribution by Frejka (2008) is his discussion of the ambiguity of the economic crisis explanation. He claims that ''by default, economic determinants were understood to fall within the 'crisis' category'' (in Billigsley 2009). A recent theoretical addition to the debate over low fertility rates, which bridges the literature on post-communist demographic studies and research on lowest-low fertility (total fertility rate is less than 1.3) in Europe, is the Kohler et al (2002) study. They pooled European and formerly communist countries that have entered lowest-low fertility and found evidence of a ''postponement transition'' (PPT). At the time of their analysis, three countries in Southern Europe, five in Central and Eastern European and six in the Former Soviet Unions had lowest-low fertility levels. They found this low TFR level to be due to postponement in childbearing which distorts the TFR and is a rational reaction to uncertainty originating in the labor market. Moreover, at the aggregate level, changes in the timing of childbirth and lower quantum were found to be reinforcing, due to feedback effects and institutional incentives (Billigsley 2009).

In order to summarize, these theories and explanations are divided into the following three symptoms: first, based on changes of socio-culture attitudes is the Second Demographic Transition, second, based on education or career of women is Postponement Transition, and finally, the third one, based on dependence of the economic situation or external implementations to stopping fertility, is an economic crisis.

As it is known, fertility is closely connected with marriage. Recent trends in European countries' changes in marital behaviors have been presented by Hopflinger (1991a), Roussel (1989), and Hoffmann-Nowotny (1987). They showed the most important and comprehensive reviews of these developments. Haskey (1993) summarized trends in the formation and dissolution of units in several countries of Europe. He states that these changes have perhaps resulted from a change in attitudes to relationships, both to marriage and cohabitation. According to Haskey (1993, p. 211-215 in Kuijsten A, 1995, p. 59), around 1970, a turning point occurred in both the timing and prevalence of marriage in most European countries. The major cases are: 1) the emerge of cohabiting unions; 2) the reaching of marriageable age by the first generations born after the War; 3) changing aspirations concerning family size and lifestyle; and 4) changing economic circumstances of the countries of Europe.

Nowadays, one of the most discussed marital statuses is the cohabitation partnership. For understanding the cohabitation partnership, it is necessary to look at the European countries also, and analyze the situation in general. According to Haskey (1993), on a cohort basis, a majority of men and women cohabit today before marriage, however, on a period basis, proportions of young people in consensual unions are still relatively modest, except in the Scandinavian countries, and of course proportions cohabiting among all unions are still smaller. Basically, because of these growing proportions of cohabitees before marriage and in between marriages, the rates of childbearing outside marriage have increased in most European countries. (Kuijsten 1995, p. 63-64).

According to Billari F. C. and Philipov D. (2004) the interplay between educational careers and the transition to motherhood is formed on the one hand by relatively rigid institutional factors (i.e., the welfare regime of a society), as well as by specific policies (i.e., regulations on public spending in education and on maternal leave for students – that is to say, factors that change more rapidly than institutions). On the other hand, this interplay is shaped by long-term cultural differences that pervade heterogeneous areas such as Western Europe and that have deep historical roots (i.e., norms on the separation of life course domains), as well as by ideational factors that are likely to change more quickly on the historical time scale. All such factors are important in determining actual differences; although each of the four types actually refers to different scholarly traditions (Furstenberg, 2002; Billari, 2004a, 2004b in Billari and Philipov).

All the above discussed theories and explanations relate to fertility decline trends, which the most likely to explain the decline trends of total fertility rate (average number of children per woman) from 1988 to 1999. However, debate about increasing fertility trends, which were observed in Kazakhstan from 1999 to 2008, should consider political implementations to augment the natural increase of population. Some discussions were explained by the Kazakhstani historian A. Alexeenko (2004), who connected these increasing trends of absolute number of births and total fertility rate not with the economic welfare of the country but as a result of those who were born during the second demographic wave (the late 1970s – 1980s) reaching their reproductive ages.

However, during the study we examined that hypothesis such as "the greater the increase of the economy – the lower the decrease of fertility" is not suitable for reproductive behavior of population of Kazakhstan because that population is a family oriented one. On the other hand, it is important to mention that the theory of Postponement Transition will be much closer to marriage behavior in Kazakhstan due to the education and making careers of both sexes in Kazakhstan.

Ethnic differentiations in fertility in Kazakhstan of each ethnicity distinguished from each other. However, each tendency tracked similarity – upward. None of them showed a decreasing trend from 1999 to 2006 in Kazakhstan. Even in their original countries fertility have similar behavior compared to the original countries of each ethnicity: among all selected countries in Ukraine Ukrainians showed the lowest level, in Kazakhstan Kazakhs have low and in Uzbekistan Uzbeks show the highest fertility level. Despite the fact that fertility according to marital status of women was conducted by the Demographic and Health Survey in different years (Kazakhstan - 1999, Uzbekistan - 1999 and Ukraine - 2007) each country has stable position in fertility and it is the least likely that their positions will be changed in the near future.

In order to summarize theoretical view on fertility, in Kazakhstan non-traditional society as well as the traditional one waited for the best time for childbearing, and only after the economic growth and political stabilization the fertility level increased in the country. It is seen in growing fertility, especially in number of live births in marriage than out of legal wedlock partnerships. Thus, an economic crisis is more suitable theory related to stopping fertility in Kazakhstan before 1999, when economic situation stabilized and such behavior more resemble to the symptoms of the theory based on dependence of the or external implementations to decreasing fertility.

CHAPTER 3. HISTORICAL BACKGROUND OF ETHNICITIES

3.1 History of ethnic movement in Kazakhstan

The history of ethnic movement of Kazakhstan began around the 1870s up to 1917, when in pre-revolutionary oriental literature materials about the different sides of life of the multinational population of Kazakhstan were accumulated: about its ethnical composition, population size, migration of peasantry from European Russia, about its cities, economy, the history of joining Russia and its administration. However, political and economical history, physical geography of the region, fashion, and folklore were examined better than its social history, ethnical and numerical structure, and the class struggle. On the other hand, before the October revolution, Kazakhstan and Central Asia were studied separately (Bekhmahanova 1986).

The reasons of migratory movements were one of the important topics of pre-revolutionary historiography. The significant point of migratory movements was the arrangements about transformation from nomadic kind of life to agricultural one. However, other historians, as A.I. Vasilchikov (Vasilchikov 1967 in Bekhmahanova 1986), concluded that the migratory movements from European Russia were the result of discrepancy of population development and productive forces. Also Vasilchikov examined the movement as a "means for gradual equalization of allotment and right placement of population".

According to Bekmakhanova N.E. (1986), along with the labor force the major migratory flows were also military personnel, especially in the 1870s. Thus, from Siberian Cossack army was created Semirechensk (Zhetisu) Cossack army, later in that army was included peasants. (Bekhmahanova 1986).

Russians and Ukrainians during the 1870s constituted 8.25 % of the whole population of Kazakhstan (and Kyrgyzstan) (245.9 thousands of people). By 1897 the number of Russians increased up to 539.7 thousands of people, it means 10.94 % and 93.2 thousands of Ukrainian population, their specific weight reached to 1.89 %. The reason was not only in the large

amount of migrants to Kazakhstan, the significant point was in natural increase – their number of children per women was relatively higher than among the local population (Bekhmahanova 1986).

Kazakhs during 1870s constituted 70 % of the whole population of Kazakhstan. From 1879 to 1897 the specific weight decreased from 73.38 % down to 67.66 %. The reasons were decrease in population size due to slower natural population growth, and secondly, the large number of migrants from European Russia (Bekhmahanova 1986).

At the same time the other ethnic groups in Kazakhstan were about 3 % of the whole population of Kazakhstan: Tatars, Mordvas, Bashkirs, Chuvashs, Mishars, Jews, Uzbeks, Turkmens, Karakalpaks, Tadjiks, Kalmyks, Poles, expatriates from Eastern Europe and other part of Central Asia, their number was 302 639 people (Bekhmahanova 1986).

In the beginning of the 1930s there was famine in Kazakhstan, which was crucial for the whole population of that country; the population size became closer to the number registered in the previous census which included the migrants not only from the Soviet countries, but also from Germany, Poland, - and other territories. The reason for migration waves from the above mentioned countries was that Kazakhstan was accessible, especially for the injured and displaced people during and after the Second World War. That is why the population size of Kazakhstan increased up to 7.7 % after the WWII (Masanov et al. 2001).

Table 1a shows the ethnic structure of the population of Kazakhstan in 1939 and 1959. According to Masanov et al. (2001) the higher percentage of Russians (41.2 % in 1939 and 42.7 % in 1959) than Kazakhs (36.4 % in 1939 and 30.0 % in 1959) could be explained by two reasons: increasing number of Russian immigrants to Kazakhstan and decreasing number of Kazakhs. The share of Kazakhs in 1959 decreased down to 30 %. However, it does not give the reasons to explain such a decrease, which could be connected with a natural decrease of the Kazakh population.

The most significant period for the ethnical formation of Kazakhstan was economic and political program called “Development of virgin and long-fallow lands” (1951-1960). During the realization of that program the number of immigrants in Kazakhstan increased from 6394.6 thousands of people in 1939 up to 9294.7 thousands of people in 1959 (see Table 1a). Most of them were Russians, Ukrainians, and Belarusians. However, later the number of Ukrainians and Belarusians decreased due to the assimilation processes, thus, many of them registered as Russians (Masanov et al. 2001).

Table 1a – The number of population by ethnicity in Kazakhstan in 1939 and 1959

	1939		1959	
	Number of population in thousands	**Share to total number of population in %**	**Number of population in thousands**	**Share to total number of population in %**
All ethnic groups	***6394.6***	***100.0***	***9294.7***	***100.0***
Kazakhs	2327.6	36.4	2787.3	30.0
Russians	2635.6	41.2	3972.0	42.7
Ukrainians	676.8	10.6	761.4	8.2
Germans	93.6	1.5	659.7	7.1
Others	661.0	10.3	1114.3	12.0

Source: Masanov N.E., Abylhozhyn Z.B., Erofeeva I.B., Alexeenko A.N., Baratova G.S., History of Kazakhstan: people and cultures. Almaty, 2001.

So, from 1960 migration waves in Kazakhstan were replaced by the natural growth of the population, i .e. migration was no longer the factor and instead it was the natural, biological reproduction of the existing population. The first main reason of such a population change in that period in Kazakhstan was due to increased fertility level and mortality decline related to the development of health care system and other socio-economic factors. The second reason explained the increased number of births was people who came to develop the virgin and long-fallow land in Kazakhstan were young reaching their "peak" of their reproductive age. Because of weak ethnic migration flows during the period of 1960-1989 the population did not almost change ethnic structure and the period will not be considered as important for ethnic change in Kazakhstan (see Table 1b).

However, from the beginning of the independent sovereignty (1990) of Kazakhstan, the number of migrants began to decrease due to the financial and political crisis in the country. Almost all Soviet countries experienced such a crisis, people moved to their historical lands, especially most of the German ethnicity returned to Germany. Such a situation was not only due to the political and economic crisis, for instance Germany announced the returning program and introduced different facilities for repatriates. That is why the share of Uzbeks came to rise and Uzbeks represent one of the dominant ethnicities in Kazakhstan. In addition, Uzbeks did not belong to the emigrant ethnicities, controversially their number increased due to biological reproduction and immigration into Kazakhstan. Nowadays, 2.5 % of the Kazakhstan population is of Uzbek ethnicity, and it is likely that their share is going to increase. It is also probable that other ethnicities from Central Asian countries will come due to the political and social circumstances in their countries, because in recent times Kazakhstan has become a more economically and politically stable country when compared to other Central Asian ones (see Annex 1).

In Section III of the Dissertation will be considered data of Uzbekistan and Ukraine that is why in order to see general situation ethnic movement of the countries following short migratory history is included.

Table 1b – Ethnic structure of population in Kazakhstan in 1959, 1970, 1979 and 1989

Ethnicity/Indicators	1959		1970		1979		1989	
	Absolute number in thousands	**Share (%) to total number of pop-n**	**Absolute number to thousands**	**Share (%) to total number of pop-n**	**Absolute number in thousands**	**Share (%) to total number of pop-n**	**Absolute number in thousands**	**Share (%) to total number of pop-n**
All ethnic groups	***9295***	***100***	***13009***	***100***	***14684***	***100***	***16464***	***100***
Kazakhs	2787	30.0	4234	32.6	5289	36.0	6535	39.7
Russians	3972	42.7	5522	42.5	5991	40.8	6227	37.8
Germans	660	7.1	858	6.6	900	6.1	957	5.8
Ukrainians	761	8.2	933	7.2	898	6.1	896	5.5
Tatars	192	2.1	288	2.2	313	2.1	328	1.9
Uzbeks	136	1.4	216	1.7	263	1.8	332	2.0
Belarusians	107	1.2	198	1.5	181	1.2	183	1.1
Uigurs	60	0.6	121	0.9	148	1.0	185	1.1
Koreans	74	0.8	82	0.6	92	0.6	103	0.6
Azerbaijanis	38	0.4	58	0.4	73	0.5	90	0.6
Dungans	10	0.1	17	0.1	22	0.2	30	0.2
Others	498	5.4	482	3.7	514	3.6	598	3.7

Source: Alexeenko N.B, Alexeenko A.N. Population of Kazakhstan for 100 years (1897-1997), 1999.
Note: The table was constructed from the same source.

3.2 History of ethnic movement in Uzbekistan

In the late 19th and early 20th century Russian peasantry began to settle in the areas of Golodnaya Steppe (South-West of Tashkent) creating migrant settlements. In the 19th century Uygurs who fled China's Xinjiang province settled in the mountain valleys in the East of Uzbekistan. During the conflicts between Soviet Union and Japan in the 1930s Koreans from the Far East were deported to Uzbekistan. During the World War II part of the population and industrial enterprises from the western part of the USSR were evacuated to Uzbekistan bringing along Russian and Ukrainian workers, engineers, and artists. At the same time part of the non-Slavic Crimean population and the Germans living along the river Volga were deported to Uzbekistan. In the 1950s an intensive migration to Uzbekistan began. Until the mid 1970s the main direction of net migration was from Russia to Uzbekistan as the result of new developments in irrigation, transport, power supply, mining, engineering, chemical, textile, and other sectors. At that moment in history the republican government believed it was cheaper to move labor force to Uzbekistan from Russia and Ukraine than to train local people who did not have necessary skills, mentality, and social mobility. By the 1960s Russia began to experience the lack of labor resources, and consequently migration changed direction (Alikhan 1999).

Since the 1970s people began to move in large numbers from Uzbekistan to Russia where the population began to grow older and lesser in number. By that time a large proportion of human resources, that is the able-bodied young generation of Russia, moved from villages and small towns to the industrially developed urban areas (Alikhan 1999).

Since the 1970s migration has been influenced by internal, Uzbekistan-originated factors. As the level of education and skills of the titular nations (Uzbeks, Tajiks, Kazakhs, Karakalpaks, and etc.) grew, their chances to acquire a higher social status and to get a more prestigious job increased significantly. Therefore, since the 1960s the Slavic ethnic groups, or the so-called Russian-speaking population gradually began to loose their privileged positions in trade, education, culture, and health care – the growing number of people employed in these sectors was both absolutely and comparatively secured by the indigenous population (ibid).

1990s were marked by the exodus of the Slavs and the Russian-speaking population from other sectors of national economy, such as industry, civil engineering, communication and education. One reason was that they were loosing their ability to compete on the labor market of Uzbekistan, and the other was Russians acute need of specialists and skilled labor (Alikhan 1999).

After the independent national states have emerged, migration acquired a more explicit ethnic character. At the beginning people feared to loose a chance to reunite with people of the same identity in their native republics. Then the communication between Uzbekistan nationals and their relatives in other CIS countries became complicated due to the dramatic increase in prices for transport services, introduction of visa regime in some of the former republics of the USSR, introduction of own non-convertible currencies in all republics, and tense or even life-threatening situation in some of these states. Considerable portion of Uzbek emigrants are forced migrants and refugees who leave Uzbekistan not only for economic reasons, but also because of the encroachment upon the rights they used to enjoy (ibid).

Formation of independent states on the territory of the USSR changed the nature of migration from Central Asian republics including Uzbekistan and made it more diverse by bringing in the flow of emigrants, repatriates, ecological and ethnic refugees and migrants, relocated military and their families. Since 1989 about four million people moved within Uzbekistan or left its territory, which means that since 1989 every one of six adults in the region was on the move. Within Uzbekistan about 19 million people changed the address of their fixed abode (Alikhan 1999).

Migration from Uzbekistan is complicated and is partly hidden from the government authorities responsible for making records of peoples movements. The official statistical data reflect the general tendency of migration but fail to report the exact numbers. For instance, the statistical institutions of the CIS countries are not able to keep a record of migrants who received and maintained dual citizenship for a certain period. People need this type of citizenship to fully enjoy citizen rights in the republic of sojourn, for example, Russia or Uzbekistan.

According to Alikhan Aman (1999) in Uzbekistan dual citizenship is prohibited by laws, however those who needed it could acquire it illegally. The procedure is simple: a citizen

would loose his passport, report the loss to the office of the Ministry of Interior [police], get a new one with the Uzbekistan registration, and use his old passport to register his departure from Uzbekistan by giving a bribe. Usually such individuals would not indicate the point of destination. Russia's Nezavisimaya Gazeta reported that over the last three months 17 000 residents of the capital of Uzbekistan lost their passports. Government raised the amount of penalty for loosing passport to 5,650 soums (up to 8 US dollars). According to the same newspaper about 200,000 individuals in the CIS and Uzbekistan have dual citizenship. As these people can be registered in two countries and be physically present only in one of them, it is impossible to find out where they actually stay. Net migration without indicating the destination counted 83 thousand people.

Intensive migration from Uzbekistan began long before the perestroika and originally was caused by economic reasons. Only after 1989 migration causes acquired an ethnic tinge. During the period between 1981 and 1990 the number of migrants from Uzbekistan to Russia amounted to 684,000, and from 1991 to 1994 their number equaled to 364 thousand (ibid).

3.3 History of ethnic movement in Ukraine

The outward migration in Ukraine was always stimulated by social, economic, political and religious reasons. Emigration and immigration in Ukraine have a long history. The first migrants are mentioned in the second half of the 13th century. They were Ukrainian architects, craftsmen who were settling in the towns of the Grand Duchy of Moscow, refugees who tried to escape Mongol invasion, merchants, etc. Of special nature was the migration during the Cossack period (16-18 centuries) when, due to different reasons, voluntarily or forced, Ukrainian people had to move to the territories of the Russian Empire. (Social-economic geography of Ukraine 1998).

The Ukrainian Cossacks were also among migrating populations. The Zboriv Agreement of 1649 and unsuccessful Battle of Berestechko made some parts of the Ukrainian Cossacks move to the territory of the Grand Duchy of Moscow.

Political emigration in Ukraine started during the Cossack period. The first big wave of the political emigration from Ukraine was called Mazepa emigration. It was caused by the defeat of the Swedish Army in the Battle of Poltava. After the battle emigration from the Eastern Ukraine to the northern parts of Russia was forced in order to get more people for the construction of the utility structures, military facilities, etc.

A big number of the Ukrainian Cossacks and peasants were used for hard labor in different parts of the Russian Empire, for the Russian military campaigns against other countries. Thus, Ukraine was the "supplier" of the cheap labor force to the different regions of the Russian Empire. In the first half of the 19th century people mostly migrated to the Black Sea and Azov Region, to the Northern Caucasus, the Volga region, Ural, and the Central Chernozemic Economic Region.

In the first half of the 19th century the migration streams from Ukraine changed their directions to Siberia, Kazakhstan, Kyrgyzstan, the Far East because of the development of new lands. More people started to migrate after the Abolishment of Serfdom in Russia in 1861. It caused the change of economic and social conditions of the peasantry for the worse and the periods of hunger in Ukraine. (Social-economic geography of Ukraine 1998).

Migration activity growth was observed after the Stolypin agrarian reforms that brought stratification of the peasantry. As a result, many poor peasants from Kiev, Poltava, Chernigov and other regions of the Eastern Ukraine had to look for seasonal jobs on the forest-steppe plantations, in the grain regions of Ukrainian steppes where agricultural practices were based on the capitalist principles. Others had to move to the Eastern regions of the Russian Empire.

The intensity of emigration flows in the beginning of the 20th century is proven by the following facts: from 1894 to 1903 there were 42 thousand people per year moving to other places, from 1906 to 1910 there were 202 thousand people. Most of them were from Left-Bank Ukraine (Kiev, Poltava, Chernigov), much fewer from Podol'e, Volyn, southern regions of Ukraine.

Harsh economic conditions (lack of land, unbearable taxes, social and national oppression) in the beginning of the 20th century forced thousands of peasantry from the western regions of Ukraine (Galicia, Bukovyna, Zakarpattia) to move to the USA, Canada, Brazil, Argentina.

Before the First World War 800,000 people left this region. At the same time the reverse process was happening: the Poles were intensively moving to the western Ukrainian land. In the beginning of the 20th century their number grew by 19.4 %, while the number of Ukrainian – by 8.9 % only. Emigration of the peasants from Galicia and other regions of Ukraine was regarded as a national disaster according to I. Franko, V. Stefanik and others (in Social-economic geography of Ukraine 1998).

Emigration of the population from the western region, as well as the whole country, in the end of 19th and beginning of 20th centuries was caused by economic reasons mostly. After the October Revolution of 1917 the forced political emigration began.

As a result, a number of political and military figures, part of intelligentsia, that were supporting the Ukrainian People's Republic, were forced to leave Ukraine. During the collectivization a lot of wealthy peasants and a big number of Ukrainian intelligentsia, were forced to move to the Eastern parts of the former Soviet Union.

In the 1930s and 1940s various national minorities, such as Germans, Poles, Tatars, were evicted from Ukraine. More than one million people were deported from the western regions of Ukraine to the eastern regions of the former Soviet Union during and after the Second World War. After the Second World War a significant share of the population of the western regions of Ukraine moved to the USA, Australia, Canada or countries of Western Europe. (ibid).

They were the members of the Ukrainian Insurgent Army and their families. A considerable number of Poles, Germans and Czechs moved from Ukraine to their historical motherlands after the war. In the 1970s and 1980s a group of Ukrainian citizens (dissidents)

were evicted from Ukraine because of political reasons. Some of them returned back later. During after-the-war period (1980s) emigration of the Jews to the USA, Canada and Israel began.

A lot of young people emigrated from Ukraine to the development of virgin lands in Kazakhstan, to the construction of agricultural utilities and railroad in the European north of Russia, Ural, Siberia, and the Far East. Approximately one thousand Ukrainian citizens left the western regions for the USA in 1988 because of religious issues. They were mostly Pentecostal Christians. After the independence the emigration flows from Ukraine decreased in their number. Regarding immigration of population to Ukraine, it should be noted that it has a long history as well. Its nature is determined by the historical peculiarities in the country's development. The traits of immigration to Ukraine are as follows:

1) Ukrainian statehood is a relatively recent event, that is why population immigration to Ukraine was never checked; 2) throughout its history most of the immigrants were coming to Ukraine from the neighboring countries such as Russia, Belarus, Poland, Moldova, Hungary, Slovakia and, as an exception, Germany; 3) During the last two centuries the majority of immigrants were of Russian origin. It was pre-determined by the development of the southern steppes, industrial development of Donbass and Pridneprovye in the second half of the 19th and beginning of 20th century, migration of the Russian peasants to Ukraine after the Holodomor (famine) of 1932 – 1933, etc. 43.4 % of the Russian population in Ukraine nowadays came in the post-war period; 4) Immigrants to Ukraine started to come from the former republics of the Soviet Union: Kazakhstan, the republics of the Middle Asia, South Caucasus, Belarus, Moldova; 5) After Ukraine became independent, the citizens of the Ukrainian nationality from western and eastern diaspora are coming back. Inward migration (between regions, towns, cities, etc.) is also of high importance for Ukraine.

Modern outward migration has political and socio-economic motives. Because of these motives the Jews are leaving Ukraine. After Ukraine gained its independence, there are favorable conditions for those Ukrainians who live abroad to return back.

The same applies to other nationalities that lived in Ukraine before. The in and out flows of migrants are considerable. The number of immigrants has been prevailing over the number of emigrants by 100,000 people per annum recently.

Most of the people moving to Ukraine are those from the former Soviet Union. Not only Ukrainians are coming back, but the deported Crimean Tatars, Germans and other nationalities also. Pensioners from the Far East, Siberia, and Northern Russia come in order to spend their old age in the favorable climatic conditions of Southern Ukraine (the Crimea, the Azov regions, the Black Sea regions).

Such an influx of older people contributes to the growth of aged population in this part of Ukraine. A big number of people leave for the countries of the former Soviet Union. Most of them are settled down in Russia (Eastern, Far-Eastern and Central regions).

A lot of people emigrated to Uzbekistan, Kazakhstan, Moldova and Belarus. Most of the migrants from Ukraine are young people. Almost 76 % of them are the people of 30 years old. Approximately 10 % of the immigrants are of preretirement age, mostly military men.

Ukraine, as well as other countries in the world, will have to work out certain regulations for migration flows. The first priority is to set the immigration quotas, especially to the Southern regions of the country which are the most attractive for the immigrants. (Social-economic geography of Ukraine 1998).

CHAPTER 4. THE HISTORY OF ETHNIC IDENTIFICATION FROM SOVIET PERIOD TO RECENT TIME

Ethnic self-identification is a conscious act of the ethnic self-determination of a person, his/her association with a certain ethnic group. Ethnic self-identification is a second stage of a personal identification (determining likeness) following the determination of the differences from other ethnicities according to the psychological formulae "us - them". During ethnic self-identification two aspects can be distinguished: a) quality aspect i.e. based on ethnic feeling of a person, and b) procedural (the system of the factors that stipulate the dynamics of the process itself).

Usually there are three elements that can be applied to all the factors of the ethnic self-determination: parents, language and ethnic consciousness. However, the number of such elements grows with getting higher education and qualifications, reorientation to conscious, rational indications of self-identification.

In the majority of cases a person identifies himself/herself with the people of his/her parents. For example, if the family speak Russian and a child is surrounded with the culture and traditions typical for Russian people, naturally he/she will consider himself/herself Russian when an adult (Tavadov, 2007).

The majority of Soviet people started to get their first passports in 1932, when a free choice of ethnicity was allowed. However, in 1939 the Directive of the Ministry of Internal Affairs of the USSR (later known as the Decree of the Council of Ministers as of August 17. 1974 "On issuing new passports") it was written that the ethnicity in the passport should be similar to that of one's parents. More precisely, child could choose his/her ethnicity according to passports of his/her parents. In other words, if the parents have different ethnicities, the ethnicity of which parent to take could be determined by a recipient of the passport and later a change of ethnicity was not possible. According to this procedure, the ethnicity is defined "by blood". However, during the population census ethnicity is fixed from the words of a respondent without checking his/her passport, i.e. on the basis of self-identification (p. 294).

Following the collapse of the USSR each emerging country chose its own way of determining the people's ethnic identification. Thus, the Constitution of the Russian Federation of 1993 gives the following (Article 26):- Indication of one's nationality is not a duty, but the right of a person. Moreover, the determination of nationality is subjective, i.e. it is based on self-identification, self-determination of a person (www.kadis.ru).

In Kazakhstan in 2000 "Rules of documentation and registration of people in the Republic of Kazakhstan" were allowed where it is written that people can display their ethnicity by choice or need not include such information in individual documents like their passport or identity card (From 12.07.200 N1063 "The rules of recording and registration of the population in the Republic of Kazakhstan").

In Ukraine there is no information about ethnicity in passports (http://meget.kiev.ua), whereas in Uzbekistan the record of the ethnicity in the passport is done according to that of the parents. If the parents are of different nationalities, the nationality to be recorded in the first passport of a person depends on his/her own wish (either father's or mother's). Later, the nationality can be changed to that of the other parent and a formal written application has to be submitted. Such a change is allowed just once (www.pravo.uz).

CHAPTER 5. THE HISTORY OF MARRIAGE AGE AND HOUSEHOLD

5.1. From the history of marriage age

During the Soviet times the minimum marriage age for both sexes was 18 years in almost all the republics, except for Ukraine and Uzbekistan where it was 17 years for women. In some cases the permission to get married earlier was granted by the special decision of the Executive Committee and other competent organizations in the place of residence or registration of marriage of the person under age. The maximum concession was two years younger than the official minimum marriage age, and no more than one year in Ukraine and Uzbekistan. In Kazakhstan only women were privileged to have this opportunity in case they were no more than one year younger than the official minimum marriage age.

The formal permit contained the following information: who is granted a permission and what is the officially recognized minimum age to get married. ("Instruction on the procedure of registration of marriages in the USSR as of 22.07.1991", http://lawru.info)

Nowadays, the law on the minimum age for marriage in the selected countries has not changed much, allowing young couples to register marriages earlier than the minimum marriage age. Thus, in Kazakhstan for men and women it remains to be eighteen years. In exceptional cases the local Registry Office has power to allow for a reduction of the minimum marriage age for no more than two years. The petition to reduce the minimum marriage age with explanations on the reasons why the permission should be granted to a young couple can be filed by those who are getting married, their parents, or a guardian. In any case the reduction of the minimum marriage age is possible only with the full consent of both sides of a future married couple. Marriage between those under the marital age is allowed only in full consent with the parents or guardians.

Similarly in Russia the Family Code determines 18 years as an eligible minimum age for marriage. In exceptional cases the local self-government institutions have legal right to give the permission to those who are 16 years old. (Federal Law as of 15.11.1997 # 140- ФЗ). The

order and conditions under which such permission can be granted might be established by the Laws of the constituent territories of the Russian Federation. (www.kadis.ru)

In Ukraine men can legally get married at 18 years, whereas women can do so at 17. The Executive Committees as Governmental Administration of the Districts can consider the reduction of the marital age upon the application of a person who is 14 years old. Such permission can be granted to him/her upon the decision of the Court which proves that this is in his/her interest. (http://meget.kiev.ua)

In addition, self identity documents in these countries are similar. In Kazakhstan two documents can confirm personality, one of them is a personal identity card (udostoverenie lichnosti), which is used inside Kazakhstan and second one is a passport for using abroad. In Russia, Ukraine and Uzbekistan personal identity documents are a passport (inside a country) and a foreign passport.

5.2 Overview of Household

The type of accommodation influences the way of life of a household and its' members. According to analysis of E. Sherbakova (2007) the all-USSR Population Census in 1989 in such Soviet republics as Russia, Belorussia, Kazakhstan, and Ukraine people lived in apartment blocks, while people in Central Asia (excluding Kazakhstan) and Azerbaijan preferred detached houses. The fact that detached houses were preferred in Central Asia (excluding Kazakhstan) and Azerbaijan can be explained by the absolute and relative growth of the rural population. According to the results of the 1989 all-USSR Population Census, the majority of the urban population in all the republics, except Uzbekistan, lived in flats (separate or shared) – 78% in Russia, 44% in Uzbekistan. In Uzbekistan the number of urban people who lived in detached houses or their parts was 52%. In other republics the numbers were different: 15% in Russia, 43% in Kyrgyzstan. A lot of people from urban areas (Belarus and Moldova especially) lived in the dormitories. As a result, the most common type of accommodation in Russia, Belorussia, Kazakhstan and Ukraine is a flat; detached houses were common for Central Asia and Azerbaijan. (http://demoscope.ru)

Due to lack of the data in Uzbekistan (last census was in 1989), it is impossible to offer any analysis related to the number and type of households there. However, it is obvious that families are more oriented to live in a detached house than in a flat due to family size (where relatives often occupy the same living space.) Ethnic Kazakhs living in the Southern part of Kazakhstan display similar behavior as Uzbeks, whereas in the Northern part there is no "seeking" to live in detached houses, which can be associated with behavior of non-traditional ethnicities.

CHAPTER 6. GENERAL DESCRIPTION OF THE ETHNICITIES AND SOCIAL ATTITUDES

6.1 Kazakhs

The Kazakh ethnic group was formed from the different ancient tribes that populated the territory of contemporary Kazakhstan. They were Saks (Skiffs), Uisuns, Kangyus, Tyurks (Tyurgeshs), Tele, Karluks, Kimaks, Oguzs, Kipchaks, etc. In the middle of the 15th century the Kazakh khanate was created, which was getting more and more power from century to century. Until the 20th century Kazakh ethnicity was divided into three zhuzs: the Grand, the Middle and the Youngest. Each of the three zhuses consisted of different, however, related tribes, representing three administrative parts of the whole Kazakh khanate. The Kazakh language belongs to the Northern-West (or Kipchak) Turkish group of languages. Most of them profess Sunni-Islam. In the end of the 1980s the number of Kazakhs worldwide was about 10 million, most of them lived in the USSR (8 135 818 people), including 6 534 616 people in Kazakhstan (Masanov et al. 2001).

6.2 Russians

Significant groups of Russians began to appear in Kazakhstan in the 18th century. By 1870 their number reached 2 459 000 people, and by the census of 1897 – 5 397 000 people. The Russian language is a part of the Eastern Slavic language family. Most of the Russian people profess Christian Orthodoxy. By origin Russians belong to Eastern Slavic tribes, who occupied the territory of Ukraine, Belorussia and European part of the Russian Federation in the second half of the first millennium BC. In the late 1980s the number of Russians was about 147 million. Significant groups of Russians began to appear in Kazakhstan in the 18th

century. By 1870 their number reached 2 459 000 people, and by the census in 1897 – 5 397 000 people in Kazakhstan (Masanov et al. 2001).

6.3 Ukrainians

As well as Russians and Belarusians, Ukrainians rank among Eastern Slavs. The Ukrainian language belongs to the Indo-European languages of the Eastern Slavic language family. Most of the Ukrainian people profess Christian Orthodoxy. The census of 1989 fixed 44 186 006 Ukrainians in the USSR. A significant number of Ukrainians lived in each country of USSR. In Kazakhstan their number was 896 240 people. Ukrainians have lived in Kazakhstan for a long time. According to the census of 1897, their number was 86.7 thousands of people and in the census of 1926 their number reached 860 201 people. The majority lived and continues to live in the Northern part of Kazakhstan (Masanov et al. 2001).

6.4 Uzbeks

The Uzbek language is a part of the Turkic group of languages. The informal Uzbek language distinguishes from standard language because of the multi-dialectal composition and sharp differentiations of each dialect. Almost all of Uzbeks profess Sunni Islam. Ancient ancestors were Sogdys, Khorezms, Bactrians, Fergans, and Scythian-Massagets tribes. All of these folks were of Iranian lingual family. The census of 1989 registered 16 697 825 Uzbeks in the USSR, the majority residing in Uzbekistan; as well as in Afghanistan (about 1.5 million people). After the delimitation of Central Asia in 1924 a big number of Uzbeks went to Kazakhstan, especially to Syrdariya's guberniya and later Uzbeks stayed in the Southern part of Kazakhstan (Chimkent and Dzhambul oblasts (regions)) (Masanov et al. 2001).

6.5 Social attitudes

This research considers Kazakhs (titular), Russians, Ukrainians and Uzbeks, representing the most sizable ethnicities in Kazakhstan during the 1999-2008. To clarify the social aspects, the ethnic groups are divided into 3 types: traditional, non-traditional and mixed traditional. Traditional ethnicity is represented by Uzbeks, non-traditional by Russians and Ukrainians, and Kazakh ethnicity is referred as mixed traditional. For instance, Kazakhs living in Southern and Western Kazakhstan are more traditional than those being in the Northern and the Eastern parts. The above mentioned typology is significant for understanding the differences between ethnic groups in the study.

Religion is also an important factor, which could affect the fertility or reproductive behavior of the society. Being a multiethnic country means being a multireligious one also. There are 45 religious confessions (www.akorda.ru) in Kazakhstan, among which Islam and

Christianity are the most popular religions. In terms of examined ethnicities Kazakhs and Uzbeks are affiliated to Sunni Muslim and Russians and Ukrainians to Orthodox Christianity. According to the Muslim religion, a man can have more than one wife, however, in Kazakhstan such behavior almost does not exist, only a small number of women are a second and less a third wife. According to the Law on Family and Marriage of Kazakhstan, a man can be married only to one bride, no multi-wives behaviors are allowed. However, the multi-wives families are not prohibited in Muslim society. To clarify the situation the women who are in legal marriages will be defined as "legal" and those who are not - "illegal wives". Thus, legal wives usually have children approximately one year later of a wedding, whereas illegal ones more than one year after created union, but the number is hardly noticeably in Kazakhstan.

Regarding Christianity, it prohibits such behavior as multi-wives and is strictly monogamous. That is why illegal wives among Christian ethnic groups do not exist in Kazakhstan, except so called "lovers", who usually do not have children and these relationships are not permanent. In this case difference between illegal wives and "lovers" is by a common law illegal wives can be supported by society, whereas "lovers" usually cannot.

Simultaneously, along with the religions of ethnicity which were described above, language is also an important factor, because language is a tool of relationship not only between people in general, but also between members of family which can be fundamental for choosing ethnicity of a child. For example, a mixed ethnic family would usually speak either their languages, or sometimes only the dominant language and as a result, a child (or children) from that family also speaks a dominant language. Moreover the language defines the ethnicity he associates himself/herself with. However, before a child becomes of the age of 16 (which is full legal age when a person begins to bear responsibilities for his/her actions), his/her ethnicity will be the same as that of his/her mother with the possibility to change it later.

In Kazakhstan mixed ethnic marriages appeared quite frequently. For example, in 1999 the percentage of Kazakh bridegrooms who married other ethnicity was 12 %, in 2007 it increased up to 19 %, and Uzbek – from 1 % up to 3 %, whereas the percentage of Russian bridegrooms who married other ethnicity decreased from 32 % down to 29 %, and Ukrainian – from 15 % down to 12 %. (see Table 2)

At the same time the percentage of brides who married people from the other ethnicity also increased among Kazakhs: in 1999 it was 8 % and in 2007 – 15 % and Uzbeks: in 1999 it was 1 % and in 2007 – 2 %, whereas the percentage of brides who married the other ethnicity decreased among Russians: in 1999 it was 41 % and in 2007 – 37 % and Ukrainians: in 1999 it was 14 % and in 2007 – 11 %.

Table 2– The percentage of mixed ethnic marriages in Kazakhstan, in 1999, 2006, 2007

	Men			Women		
	1999	**2006**	**2007**	**1999**	**2006**	**2007**
Kazakhs	12	19	19	8	16	15
Russians	32	30	29	41	37	37
Ukrainians	15	12	12	14	11	11
Uzbeks	1	3	3	1	2	2
Others	39	37	38	36	34	35
All	100	100	100	100	100	100

Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.

So, the languages which are frequently used in Kazakhstan are Kazakh and Russian, where Kazakh is a state and Russian is an official international language.

Despite the fact that some people originally belong to one ethnicity, they registered themselves as another one because of the language they speak. For example, the professor of Arizona State University Victor Agadjanian did the research through a survey (Demographic and Health Survey), where he divided population of Kazakhstan into two groups: Russian-Kazakhs and Kazakh-Kazakhs, where Russian-Kazakhs were those who spoke Russian and Kazakh-Kazakhs who spoke the Kazakh language. Such division could be useful for the studying in depth the types of Kazakh ethnicity or regional differentiations. Moreover, Agadjanian aggregated Russian, Ukrainian, Belorussian and other European ethnic groups in group of "European" (Agadjanian 1999), which could be confusing for examining separate ethnicities. However, such observations of Victor Agadjanian highlight the language importance in choosing ethnicity in Kazakhstan.

CHAPTER 7. SOCIAL POLICY CONCERNING FERTILITY IN KAZAKHSTAN

A Family policy is an integral part of social policy in Kazakhstan. The National Strategy "Kazakhstan – 2030" approved by the president of Kazakhstan N. Nazarbayev states that "Prosperity, security and the increase of the well-being of all Kazakhstani people" is one of the social policy priorities. Another priority of national security is a strong demographic and migration policy. If Kazakhstan's government is still indifferent to these problems, then Kazakhstan will face the situation of a "demographic cross" when the size of the population decreases not only because of outmigration, but also as a result of decreasing of natural growth. This tendency should be stopped immediately. The safety of a mother and a child must be a top priority of the country, within the healthcare system and in general society. It can be offered to impose a tax on those who do not want to have children. This tax will help extended families. Some new ways of supporting the families, pregnant women and their children must be found at the local level. If Kazakhstan wants to follow high moral standards, then spouses must be very attentive and responsible for their children and family. Thus, having such a purposeful strategy in the population policy, every year the president sends official messages for achieving the annual goals, which can help to reach the purposes of this strategy. So, regarding the policy in the field of demography, in 2000 the Concept of state demographic and migration policy of the Republic of Kazakhstan was adopted. The following goals are mentioned there (Esimova 2006):

1. To overcome the negative tendencies in demographical processes.

2. To prevent depopulation.

3. To ensure quantitative and qualitative growth of the population that corresponds to the long-term developmental strategy of Kazakhstan.

The Program of the demographic development of Kazakhstan for 2001-2005 stated that the decrease in the birth level, which started in the last decades of the last century, was caused

by the side-effects of the transitional period. The main objective described in the Program is to stabilize the birth level and to ensure its growth which will help to boost the reproduction of population. It is also highlighted that women who live in rural areas can contribute to the demographic development of Kazakhstan the most. They must be supported by the government and the society because of some economic limitations. The expected results mentioned in the Program are the following: the growth of population up to 16 million people by 2010 and up to 20 million by 2030.

In 2004 "The Law on reproductive rights and their guarantee" was issued. In article 10 "The right of a free reproductive choice" the following is stated: the citizens have the right to decide freely how many children they would like to have, when they would like to have them, in or outside of a legal marriage, the time- intervals between the children necessary to ensure mother and child's state of health. The following right are guaranteed:

- infertility treatment;
- artificial insemination;
- fetus implantation;
- use or non-use of contraception;
- artificial termination of pregnancy.

The Law also defines such notions as a surrogate mother, the contract between a surrogate mother and people who want to have a child, as well as the right and contractual obligations of both parties.

According to the addendum to the "Labor Law of the Republic of Kazakhstan" which was passed in 2004, the following stipulations were added:

- the employer is not allowed to terminate the individual working contract with pregnant women who have children up to one and a half years old;
- working women with children up to one and a half years old can have additional breaks of not less than 30 minutes for feeding a child every 3 hours of work. Such breaks are included into the working hours and must be paid.

Starting from 2003 a flat child benefit was set at 13 080 tenge (approximately equivalent in EUR 60-65). Mothers of many children, who were awarded special titles and received governmental awards, are entitled to a special governmental benefit of 1 747 tenge (approximately equivalent in EUR 8-9). According to the Pension Law of the Republic of Kazakhstan, women who have 5 and more children whom they brought up till the age of 8, can retire at the age of 53. It can be concluded that legal and political foundations for the pro-natal policy of the country have not been supported by the direct actions and measures from the governmental side. It should be noted that the repatriates are hoped for contributing to the improvement of the demographic situation in the country. The majority of repatriates are from Uzbekistan, Tajikistan and Mongolia, whose reproductive behavior is characterized by the tendency of having many children. (Esimova 2006).

SECTION II
MARITAL AND EXTRAMARITAL FERTILITY ACCORDING TO ETHNICITY IN KAZAKHSTAN

CHAPTER 8. LEGISLATION, DATA, DEFINITIONS AND METHODS

8.1 Registration of births

Registration of births is a significant procedure in the life of everyone, because it is needed to get social benefits, to be accepted to a kindergarten or school, on holiday and etc, and later - to get an identity card and passport based on a birth certificate. On the other hand, it is highly important for researchers or statisticians to analyze the data in details. Registration of births in Kazakhstan takes place at a local Civil Acts Register Office (ЗАГС (ZAGS) – Запись об Актах Гражданского Состояния), which relates to the Department of Justice of the Ministry of Justice of the Republic of Kazakhstan.

Registration of births consists of two steps that provide detailed information on getting data for statistical offices.

The first step is when a child is registered in a maternity hospital, where parents take a medical certificate of birth, which includes the following information about the mother and the father:

Child's Details:

1. The time, date and place of the birth.
2. Gender.
3. Birth order.
4. Weight, maturity and length.

Mother's Details:

1. The name(s) and surname of the mother.
2. Place of residence.
3. The date of birth.
4. Nationality (ethnicity).
5. Education (basic (начальное), secondary (среднее), vocational (средне-специальное), uncompleted higher university (незаконченное – unfinished), higher university (высшее – completed)).
6. Marital status of a mother at the time of birth.

The second step is the registration of a child at Civil Acts Register Office (ЗАГС – Запись об Актах Гражданского Состояния) and includes the following information about a child and a mother:

Child's Details:

1. Time, date and place of birth.
2. Gender.
3. Nationality or ethnicity.

Mother's Details:

1. Name(s) and surname of mother and father.
2. Place of residence of mother and father.
3. The mother's and father's date of birth.
4. Nationality of mother and father.

According to the Law "About Marriage and Family" of the Republic of Kazakhstan the application for registration of birth must be filled at a local office of Civil Acts Register (ZAGS) during the two months after a child was born. The local office of Civil Acts Register analyzed that the most important reasons of the late registration are the neglect of the child's parents to obtain the document, the lack of identity documents of parents or a parent, or of a child with a woman, who is unmarried. In this case the woman hopes to get married, and after that to formalize the birth of a child (www.minjust.kz) (see the Application 4 and 5).

8.2 Data processing

All these details are forwarded from the local ZAGS to the local Statistical Office. In order to explain the data availability in Kazakhstan, the system of administrative division of Kazakhstan must be described.

Administrative division of Kazakhstan consists of auyl (village), raion (district), oblast (region). It must be mentioned that there are 14 regions and 2 municipal cities in Kazakhstan (Astana and Almaty) (www.minjust.kz).

As well as at the Ministry of Justice, the data processing at the Agency of Statistical office of the Republic of Kazakhstan starts from local offices: for rural – from auyl (village), and for urban – from town. The auyl sends their data to the raion (district), where data are collected by one of the branches of the Agency of Statistical office – the Otdel (Bureau) of Statistics.

All Bureau of Statistics forward the data to the regional (oblast) department of Statistics, and then the regional department of Statistics in its' turn sends the data to the main Agency of Statistical Office. The data processing for urban area is shorter: it starts from town (otdel (Bureau) of Statistics), they send the data to the oblast, and the regional Department of Statistics collects information from all districts and resends it to the Agency of Statistics of the Republic of Kazakhstan.

8.3 Data quality and availability

Data for this research were sourced from published data in the public domain – the Demographic Yearbook and unpublished data – special output from the Agency of Statistics of the Republic of Kazakhstan. Special output is the main data for this research. The information and data on marital fertility were taken according to the following parameters:

period:	1999-2008 and 1999-2006;
population:	gender: women;
age:	15-49;
births by status:	marital and extramarital;
gender of birth:	male and female;
ethnicity:	Kazakhs, Russians, Ukrainians, Uzbeks, Uigurs, Tatars, Germans and others;
place of residence:	urban and rural.

All these data in terms of births excluded stillbirths, the research is based on the number of live births. The ethnic groups which are most sizable – Kazakhs (53 %), Russians (30 %), Ukrainian (3.7 %), Uzbek (2.5 %) were chosen from that data set.

Despite the fact that the period in consideration is 1999-2008, some calculations were made only for 1999-2006 because of the lack of data, especially for women by ethnicity and age structure. That is why such measurements as age-specific fertility rate by ethnicity were done only for the 1999-2006.

Regarding the quality of data, there could be some errors, especially in the rural offices. However, the errors are not expected to be significant.

Despite the fact that all details of births are being forwarded to the Agency of Statistical Office, some data is not available there. One of the suggested reasons could be incomplete information from a certificate or other sources.

Simultaneously, some numbers for this research were taken from the international database of the World Bank (www.worldbank.org) such as total fertility rate from 1965 to 2007 in order to describe the historical trends in Kazakhstan, Russia, Ukraine and Uzbekistan. Although the international database has one of the richest data collection, the lack of the numbers in some years is not substantial and the quality is quite reliable.

According to the United States of America Census Bureau (2006), data must possess three attributes of quality: utility – refers to the usefulness of the information for its intended users;

objectivity – refers to whether information is accurate, reliable, and unbiased, and is presented in an accurate, clear, and unbiased manner; integrity – refers to the security or protection of information from unauthorized access or revision. To help apply data the best, the United States of America Census Bureau further defines utility, objectivity, and integrity in terms of fifth dimensions of data quality: relevance, accuracy, timeliness, accessibility, interpretability (ibid).

Relevance of statistical information refers to the degree to which data provide information that meets customers' needs. Accuracy refers to the difference between an estimate of a parameter and its true value. Timeliness refers to the length of time between the reference periods of the information. Accessibility refers to the ease with which customers can identify, obtain, and use the information. Interpretability refers to the availability of documentation to aid customers in understanding and using data. This documentation typically includes: the underlying concepts; definitions; the methods used to collect, process, and analyze the data; and the limitations imposed by the methods used (United States of America Census Bureau 2006).

8.4 Definitions of used terms

To analyze the changes in trends of marital fertility according to ethnicity in Kazakhstan a line of specific demographic indicators were recorded where each of them bears its definitions. So, according to the glossary of the Population Reference Bureau and the United States Census Bureau, we used following demographic terms:

- *Total Fertility Rate (TFR)* is the average number of children that would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. This rate is sometimes stated as the number of children women are having today.

- *Age-Specific Fertility Rate (ASFR)* measures the annual number of live births to women of a specified age or age group per 1 000 women in that age group. Unless otherwise specified, the reference period for the age-specific fertility rates presented in World Fertility Data 2008 is the calendar year.

- *Age structure* is the distribution of a population according to age, usually by 5-year age groups.

- *Birth rate* is the average annual number of live births during a year per 1 000 populations at midyear, also known as the crude birth rate.

- *Marital Fertility Rate* is the number of live births to married women per 1 000 married women ages 15-44 or 15-49 in a given year. However, in the dissertation Marital Fertility Rate will be done by the second kind of calculation. (see Chapter 8.5).

- *Mean Age at Childbearing (MACB)* is the mean age of mothers at the birth of their children if women were subject throughout their lives to the age-specific fertility rates observed in a given year.

- *Cohort* is a group of individuals born in the same calendar year or group of years. (U.S. Census Bureau)

- *Contraception* – the conscious effort of couples to regulate the number and spacing of births, also known as family planning.

- *Urbanization* is growth in the proportion of a population living in urban areas.

- *Married women of reproductive age (MWRA)* are women at ages 15 to 49 (16-19) either formally married or living in union with a man (consensual unions).

- *Replacement level of fertility* is the average number of children each woman would have to bear for a population to remain the same size over the long term. Conventionally taken to be an average of 2.1 children per woman.

- *Vital registration* is the recording of vital events for legal, administrative, and statistical purposes.

On the other hand the important definitions in the given paper related to ethnicity. Which are:

- *Culture* – describes what people develop to enable them to adapt to their world, such as language, gestures, tools to enable them to survive and prosper, customs and traditions that define values and organize social interactions, religious beliefs and rituals, and dress, art, and music to make symbolic and aesthetic expressions. Culture determines the practices and beliefs that become associated with an ethnic group and provides its distinctive identity (Child Safety Services www.childsafety.qld.gov.au/).

- *Ethnicity* – belonging to a group that shares the same characteristics, such as country of origin, language, religion, ancestry and culture. Ethnicity is a matter of biological and historical fact and is not changed by the culture in which a person grows up (Child Safety Services www.childsafety.qld.gov.au/). In some cases, ethnicity and nationality are synonyms, especially, in post-Soviet countries it means the same meaning, however, in European or other countries “nationality” means citizenship, therefore in the Dissertation term “nationality” is not used in order to avoid confusions.

- *Ethnic identity* refers to a person's sense of belonging to an ethnic group. Ethnic identity is drawn from the realization that a person's thoughts, perceptions, feelings and behaviors are consistent with those of other members of the ethnic group. Ethnic identity recognizes that a person belongs to a particular group that shares not only ethnicity but common cultural practices (Child Safety Services www.childsafety.qld.gov.au/).

8.5 Measurements

Taking into account that registration of marriage can allow a reduction of the minimum marriage age (18 years) for no more than two years, marital fertility measurement starts with 16 years. According to the biological ending of reproductive age of women the maximum age is 49 years old, however, in some cases we observe live births where the age was 50 or a little

older. Due to the small number at age 50 and older, the maximum age of mother in the dissertation was denominated as 49 and over or 49+.

Second, in the special output of data from the Agency of Statistics of Republic of Kazakhstan they are the "unknown" data, related to the age-structure of mothers. In other words, the "unknown" is a number of children born without information of age of mothers. So, to distribute the "unknown" number of births we used the following formula:

$$Dx = Bx \times \frac{\sum_{16}^{49+} Bx}{\sum_{16}^{49+} B'x}$$

where:

Bx is the number of births who were born at the age *x* of mother in a given year;

$\sum B'x$ is the total number of births without "unknown" births in a given year from the age of 16 to 49 and over;

$\sum Bx$ is the total number of births with "unknown" births in a given year from the age of 16 to 49 and over;

Dx is the number of births by age including the "unknown" births at the age x (proportionally distributed) in a given year.

The basic indicator of the level of fertility is the total fertility rate (TFR), calculated by summing age-specific fertility rates over all reproductive ages. It may be interpreted as the expected number of children a woman who survives to the end of the reproductive age span will have during her lifetime if she experiences the given age-specific rates (Population Reference Bureau), whereas the age-specific fertility rate (ASFR) is a number of live births (B_x) to women in a particular age, divided by the number of women in that age (P^w_x). So,

$$TFR = \sum_{16}^{49+} ASFR_x \,,$$

$$ASFR_x = \frac{B_x}{mid-year\, P^w_x},$$

where x: 16,..49:

However, due to limitations in the data from the Agency of Statistics of the Republic of Kazakhstan, we used for measuring marital fertility age-specific marital fertility rate of the second kind, by the age group of mothers:

$$ASFR^{mar}{}_x = \frac{B_x{}^{mar}}{mid-year\, P^w_x}$$, where x: 16,..49:

B_x^{mar} is number of marital births by woman age

$_{mid\text{-}year}P_x^w$ is midyear population of women at age x (disregarding marital status).

It must be noted that the period of the study is related to the availability of the data: from 1999 to 2008 as in general and from 1999 to 2006 for some calculations as the age-specific fertility rates by ethnicity and the total fertility rate by ethnicity.

The mean age at childbearing is computed as the sum of central age in a given age group weighted by age-specific fertility rates at that–age group, divided by the sum of the age-specific rates. Mean age at childbearing (MACB) was computed as follows:

$$MACB = \frac{\sum_a af_a}{\sum_a f_a}$$

Where a is the mid-point age for each age interval (17.5, 22.5, etc.) and f_a is the age-specific fertility rate for women whose age corresponds to age group of which a is the mid-point. As a convention, the following one four-year age group and six five-year age groups are utilized: 16 to 19; 20 to 24; 25 to 29; 30 to 34; 35 to 39; 40 to 44; and 45 to 49.

It is necessary to note that the calculations for each ethnicity, also for urban and rural areas were made by following formulae:

1) for urban area:

$$MACB_{urban} = \frac{\sum_a af_a^{urb}}{\sum_a f_a^{urb}}$$

2) for rural area:

$$MACB_{rural} = \frac{\sum_a af_a^{rur}}{\sum_a f_a^{rur}}$$

3) and for each ethnicity:

$$MACB_{ethnicity} = \frac{\sum_a af_a^{ethn}}{\sum_a f_a^{ethn}}$$

Marital fertility is one of the significant processes among all types of fertility due to the most children are born by married women. However, some calculations for extramarital fertility were also given in this research in order to compare the situation. For example, the main indicator for extramarital fertility is the proportion, which is:

$$\frac{B^{unm}{}_x}{B^{unm}{}_x + B^{mar}{}_x} \times 100$$

where:

B^{unm}_{x} is the number of births born at the age x by unmarried women in a given age and year;

B^{mar}_{x} is the number of births born at the age x by married women in a given year.

All measurements were done using the classical demographic methods of fertility analysis, which include such parameters as ethnicity, type of settlements (urban-rural) and age structure.

CHAPTER 9. MARITAL AND EXTRAMARITAL FERTILITY CHANGE ACCORDING TO ETHNICITY IN KAZAKHSTAN

9.1 Patterns

Kazakhstan has a lot of different ethnicities, and each of them has different fertility patterns. However, the most important similarity is that all of them show the highest number of births in marriage. That is why in the beginning of this chapter the main focus will be on comparing fertility patterns for the country where the considered ethnicity is titular (Kazakhstan, Russia, Ukraine and Uzbekistan) before the study period and then the focus will shift to marital fertility patterns in Kazakhstan according to ethnicity and including all types of settlements during the 1999-2008.

This research examines Kazakhs (titular), Russians, Ukrainians and Uzbeks, which are the most sizable ethnicities in Kazakhstan during the 1999-2008. So, to clarify social aspects, the author divided ethnic groups into 3 types of society: traditional, non-traditional and mixed traditional. Traditional type includes Uzbek ethnicity, non-traditional Russian and Ukrainian, and mixed traditional - Kazakh ethnic group. Regarding the last type of society, regional differentiations of traditional type of family among Kazakh ethnicity is relatively visible. For instance, the Southern and the Western Kazakhstan is more traditional than the Northern and the Eastern parts. This aspect is significant for understanding the differences between ethnic groups in the investigation.

Let's start first with describing fertility rate of all women. One of the most frequently used indicators of fertility trend is the total fertility rate (TFR), which gives a direct measurement of the cross-sectional fertility level. So, according to the World Bank (www.worldbank.org), from 1964 to 2006 Kazakhstan, Russia, Ukraine and Uzbekistan experienced almost the similar decreasing fertility trend since 1988. In the 1980s political and economic systems were changed in the former Soviet Union. This period was called Perestroika (which is translated as restructuring). Later, this restructuring caused the collapse of the Soviet Union

and every country got independence. Every country changed its' economic system from the centrally-planned to the market economy. Consequently, this transformation resulted in a significant impact on fertility level and structure.

The total fertility rate during the Soviet period was obviously different in each examined country: fertility level was country specific, the highest in Uzbekistan and the lowest in Russia and Ukraine, whereas Kazakhstan occupied the intermediate position. The difference between Uzbekistan and Kazakhstan is considerable, while between Russia and Ukraine is almost invisible (see Figure 1).

During the Soviet period and after the collapse of the Soviet Union the downward trends or stagnation in TFR for selected countries can be observed. Kazakhstan was an exception because its population experienced two periods of upward trends: 1980-1989 and 1999-2008. The total fertility rate in Uzbekistan was almost stable at about the level of 5.67 live born children per woman till 1975 and then it decreased rapidly down to 2.36 in 2003, which means the decline of 2.40 times. At length four periods can be distinguished:

1) till 1980 almost everywhere trend was stable, excluding Uzbekistan, where already from 1975 total fertility rate decreased.

2) from 1980 to 1987, when each country experienced a slightly increasing trend, except Uzbekistan where TFR was almost stable.

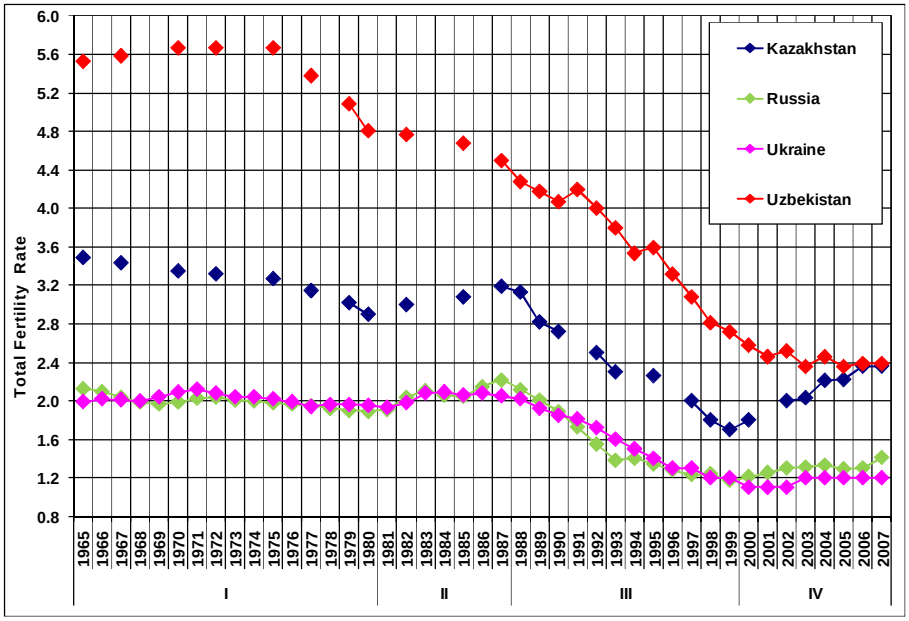
3) from 1988 to 1999 all countries showed rapidly decreasing trends.

4) from 1999 to 2008, in Russia, Ukraine and Uzbekistan the fertility level of TFR was stable, but Kazakhstan was an exception due to a rapidly increased trend resulting in the end of this period into the same TFR as in Uzbekistan.

In spite of the fact that Russia and Ukraine present almost the same tendencies, they show the small disparities of approximately 0.16. In 1987 the number of children per woman during her reproductive years was 2.22 in Russia and 2.05 in Ukraine. It means that both countries' tendencies were going down to 1.17 in Russia till 1999 and to 1.1 in Ukraine till 2000. The decreasing trend of fertility rate resulted in population decline in both countries.

To summarize, it can be noticed that the level and tendency of fertility in titular countries were similar to levels and tendencies inside Kazakhstan according to corresponding ethnicities. The more in depth analysis of fertility by ethnicity in Kazakhstan will be provided in the next paragraphs for the period 1999-2008.

Figure 1 - Total Fertility Rate for Kazakhstan, Russia, Ukraine and Uzbekistan from 1965 to 2007

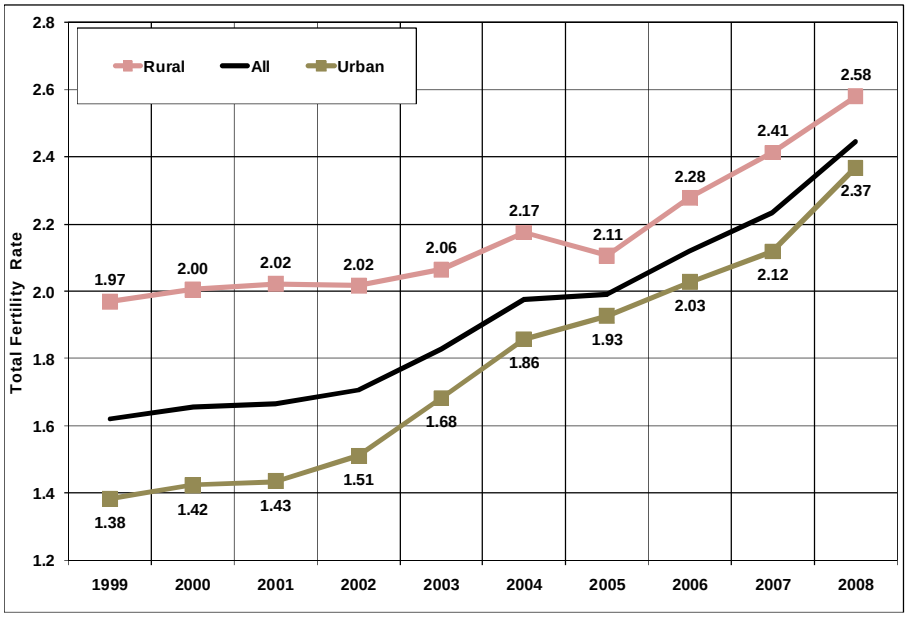


Source: The World Bank www.worldbank.org assessed on 15 December 2010.

Kazakhstan, as any other country, has two types of settlement: urban and rural. Usually, total fertility rate is higher in rural area than in urban. Rural area in Kazakhstan is more traditional and almost every ethnicity that lived there showed a higher number of children than in urban area.

The overall trends of total fertility rate by types of settlement are presented in Figure 2. Annual increases are obvious, but in 2004 and 2005 there was a slight fluctuation, especially in the rural curve, which can be associated with the economic policy measures enacted in the country. In 2004 the program “Development of rural areas” was adopted by the Decree of the President of Kazakhstan, and it influenced fertility positively in the next years, because usually when such programs are being realized, the effect on fertility comes later. Firstly, because of the family planning; and secondly, because of the time of gestation. At the same time, the gap between urban and rural fertility rates has been narrowed since 2005. It happened due to the rapid increase of TFR in urban area.

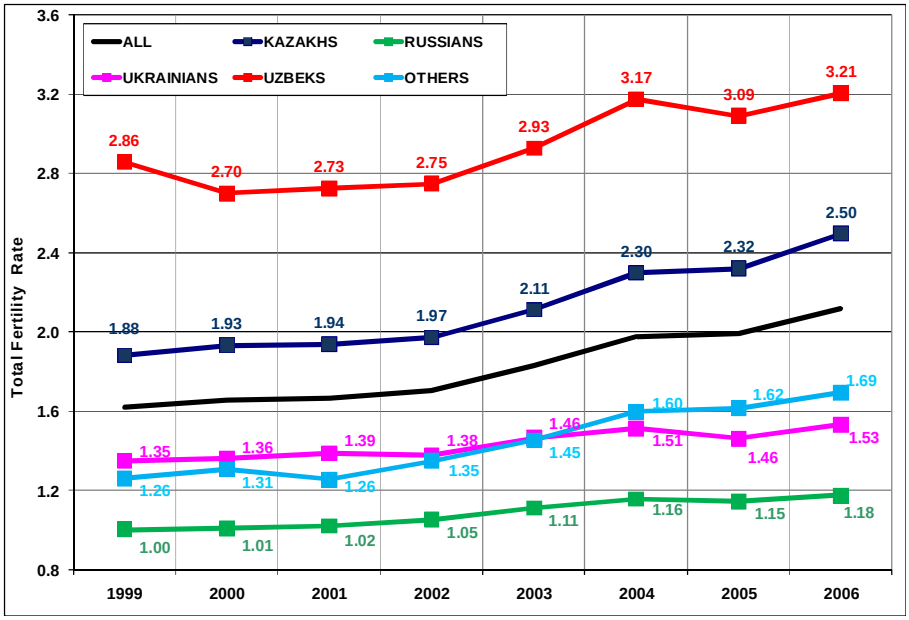
Figure 2 – Total Fertility Rate by types of settlement in Kazakhstan. 1999-2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of TFR starts from 16 years old.

The trend in total fertility rates for each ethnicity between 1999 and 2006 is shown in Figure 3. The highest total fertility rate was found among Uzbeks (between 2.5 and 3.5), and the lowest among Russians (between 1.0 and 1.2). On the other hand, regarding the speed of increase of TFR in this period the fastest were among Kazakhs (up to 1.33) and others (up to 1.34), the slowest were among Uzbeks (up to 1.12), Ukrainians (up to 1.13) and Russians (up to 1.17). However, on average, each selected ethnicity showed increasing trends.

Figure 3 - Total Fertility Rate for selected ethnicity in Kazakhstan, 1999-2006



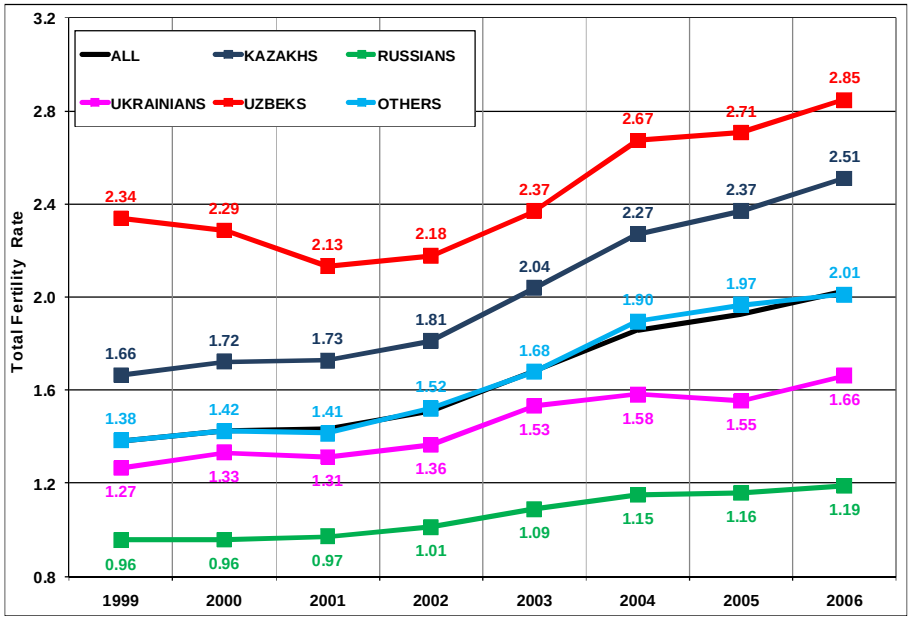
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of TFR starts with 16 years.

The trend in total fertility rate according to ethnicity in urban area in Kazakhstan showed the same hierarchy of levels as the whole country trend. However, among the Uzbek ethnic group fluctuations were observed between 2000 and 2004, and the reason of this decrease can be explained by a lot of people moving from rural to urban areas, especially those who came from Uzbekistani rural areas to Kazakhstani urban areas. This temporary change reduced their fertility behavior. Kazakh ethnicity presented a rapid increase in TFR from 1.66 in 1999 to 2.51 in 2006, which was the fastest speed among selected ethnic groups.

What concerns other ethnicities, during 1999-2006 Russian ethnic group showed the lowest position among all of them, their TFR of 0.96 in 1999 and 2000 changed their trend at the end of this period into an increasing tendency. Finally, in 2006 TFR reached 1.19.

In comparison with Russians, Ukrainian ethnic group is in better situation: their TFR was 1.27 in 1999 and increased up to 1.66 in 2006 (see Figure 4).

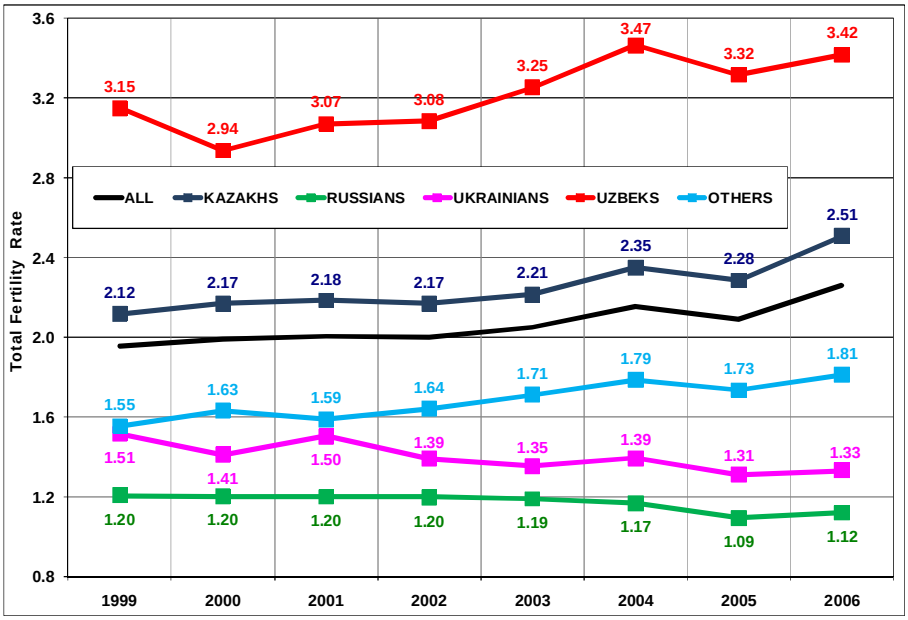
Figure 4 - Total Fertility Rate in urban area in Kazakhstan according to ethnicity, 1999-2006



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of TFR starts with 16 years.

Meanwhile the number of children per woman in rural area in each ethnic group between 1999 and 2006 was relatively higher in comparison with urban area which is shown in Figure 5. During the 1999 and 2003 Russian, Ukrainian, Kazakhs, and others ethnic groups held steady, whereas Uzbek ethnicity presented the highest and more fluctuated trend. Ukrainian and Russian ethnicities' TFR slightly declined: Ukrainian TFR of 1.51 in 1999 and in 2006 of 1.33, whereas Russian TFR of 1.20 in 1999 and in 2006 of 1.12.

Figure 5 – Total Fertility Rate in rural area in Kazakhstan according to ethnicity, 1999-2006



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of TFR starts with 16 years.

Having analyzed the trends of total fertility rates according to ethnicities and their native countries, as long as the types of settlements, the position of each ethnicity can be distinguished. The traditional Uzbek society has the highest TRF, the lowest was observed among non-traditional Russians and Ukrainians. What concerns mixed traditional Kazakhs, this ethnic group presented intermediate position among them.

9.2 Age-specific profiles

Having provided a general view of total fertility rate, we will try to examine the age-specific fertility rate (ASFR), which will show the change in intensity of fertility by age structure during the 1999-2008.

The indicator "age-specific fertility rate" can be computed for a hypothetical cohort to provide period measurements and in a real cohort to provide generation measurements. However, only the period measurements are considered in this research.

As noted previously, the minimum age of having a baby starts with 16 years. The age structure is represented by the following age groups: 16-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45, and above.

In Kazakhstan the number of live births for 1000 women in the given period changed. In the age group of 20-24 it increased from 599 to 725 children; in the age group of 25-29 it increased from 454 to 740, in the age group of 30-34 the intensity became two and a half times higher: from 272 to 509; and almost three times higher for the age group of 40-44: from 25 to 69, In the age group 45 and over the number did not changed: about 3 children. (see Table 3).

Hypothetically, women in the age group 40-44 and 45+ usually give birth to children for a reason of having children "for themselves", in other words, not to stay alone when they get older in case they don't not get married. However, this tendency also occurred among married couples, especially among Kazakhs. This can be explained by two reasons: if the family did not have a son and by the fact, that abortion was not supported at that time by other members of family, especially in rural areas.

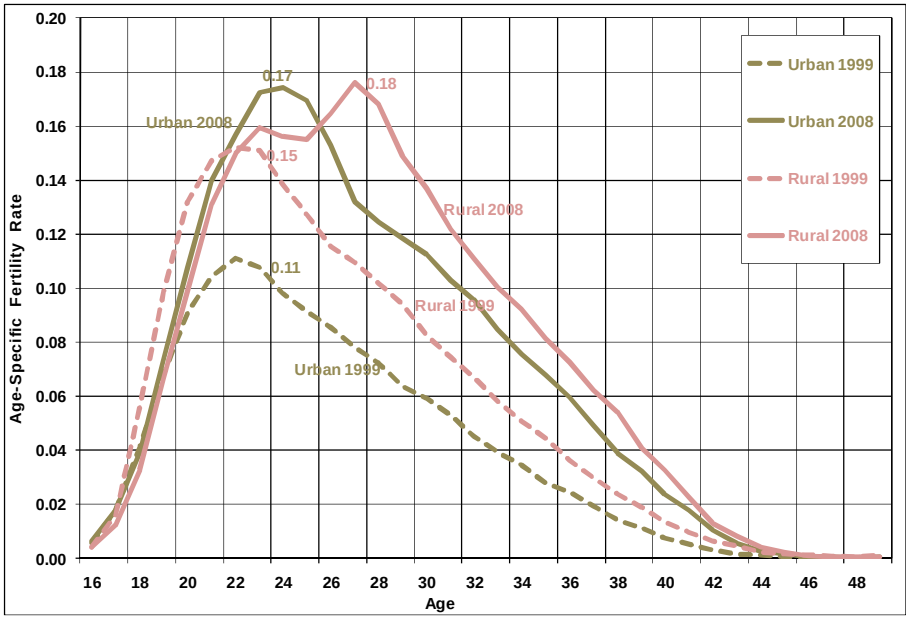
Table 3 - The number of live births per 1000 women by age for selected years

Age/year	1999	2003	2006	2008	Ratio 2008/1999
16-19	149	115	114	125	*0.84*
20-24	599	615	652	725	*1.21*
25-29	454	543	638	740	*1.63*
30-34	272	345	428	509	*1.87*
35-39	119	173	231	274	*2.30*
40-44	25	36	53	69	*2.76*
45+	3	2	3	3	*1.00*

Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.

The next figure 6 shows age-specific fertility rate by types of settlements. In order to see the difference between rural and urban areas during 1999-2008, the first and last year of this period will be considered. In comparison to rural areas, urban areas showed that the highest point of ASFR increased only for the age group of 20-24 for both years, whereas in rural areas it shifted: the highest point of ASFR was in 1999 in the age group of 20-24 year olds, in 2008 – in the age group of 25-29 year olds. In general, ASFR of these settlements obviously increased.

Figure 6 - Age-Specific Fertility Rate for urban and rural areas in Kazakhstan in 1999 and 2008



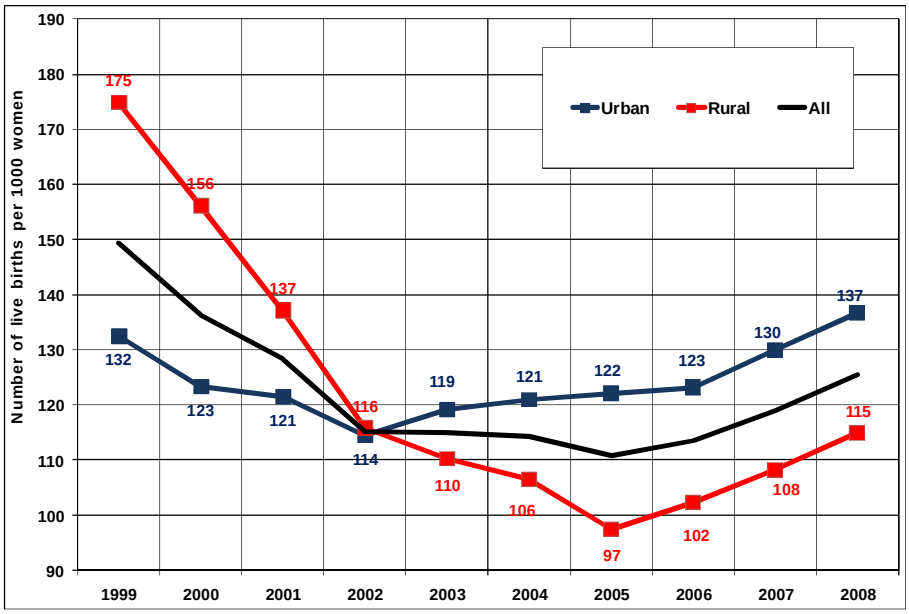
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

The changing trend of age-specific fertility rate in each age group and types of settlements gives a more detailed information about them in the considered period.

Figure 7 shows the age group of 16-19 which presented absolutely different picture than older ages; it consisted of four completed ages, while elder age groups consist of five completed ages. At the same time, this youngest age group shows so-called "scissors" picture, crossing urban area with rural one in 2002. However, this crossing point is not exactly the same: urban ASFR is 114 live births per 1000 women, while rural one is 116. From these crossing points of the trends of these areas are completely reversed: urban trend increased, whereas rural one completely declined till 2005 and then obviously increased.

Since 2000, Kazakhstan's economic situation has become stable, which positively influenced intensity of fertility in general. Despite the fact that it was the reason for increasing births among older ages (having second or third child), this youngest age group showed an downward trend. The reasons that the picture shows "scissors" could be: 1) data quality; 2) numerator/denominator bias: registration of births and estimation of number of women by age in urban and rural areas might be inconsistent in younger age.

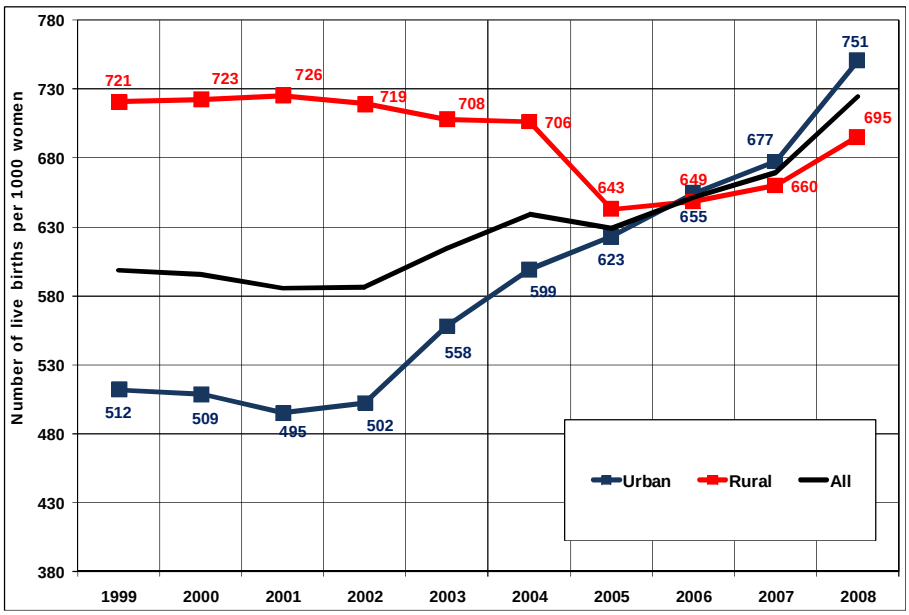
Figure 7 – Number of live births per 1000 women in the age group of 16-19 according to types of settlements in Kazakhstan from 1999 to 2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

The situation of fertility intensity for the age group 20-24 is different from previously examined because the general trend did not fluctuate as the first one. The trend of the age group of 20-24 is evident of a big gap between urban and rural areas till 2005. The fertility rate per 1000 women obviously increased in urban areas, whereas rural areas have shown an downward trend since 2002. The "scissors" picture, crossing fertility rate in urban area with rural one can be also observed since 2006 but it is less explicit. There are several reasons to explain why women in urban areas give birth less often than women who live in rural areas at that age group. First, people in rural areas usually tend to have traditional family values and, thus, tend to have more children. Second, the way of life in urban areas is influenced by modern trends from all over the world: at the age of 20-24 women usually study at the university or start making carrier after graduating from the university. This is the biggest social change of contemporary times when women at those ages pay more attention to their education and professional career. That is why more and more women in the age group of 20-24 prefer having a good career to motherhood in the first place.

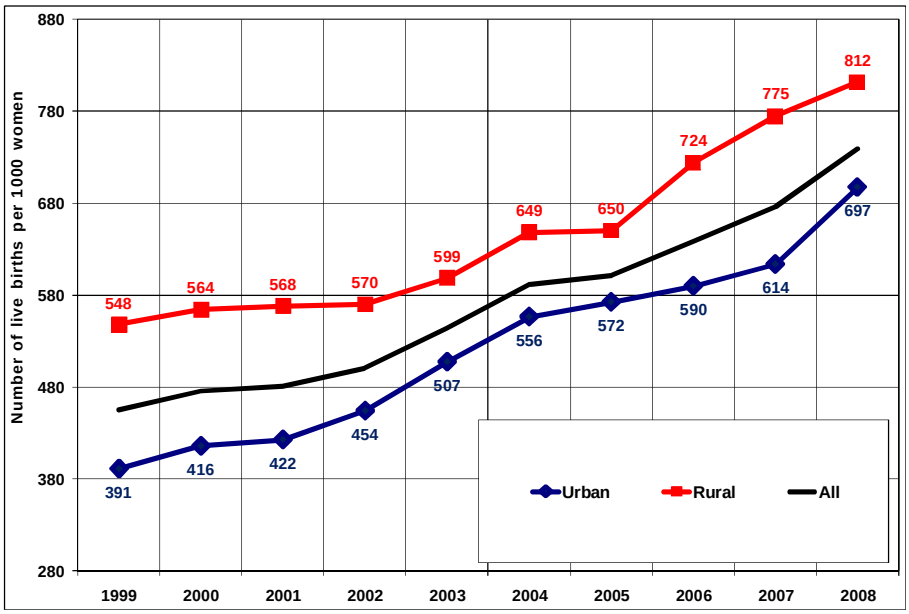
Figure 8 - Number of live births per 1000 women in the age group of 20-24 according to types of settlements in Kazakhstan from 1999 to 2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

The next age group of 25-29 presents increasing tendency. As it was mentioned above, a lower number of births per 1000 women have been observed in urban areas than rural ones. The intensity of fertility of age group of 25-29 increased from 391 to 697 in urban areas and from 548 to 812 births per 1000 women (see Figure 9). Thus, more births per 1000 woman were given in 2008 in the group 25-29 than 20-24.

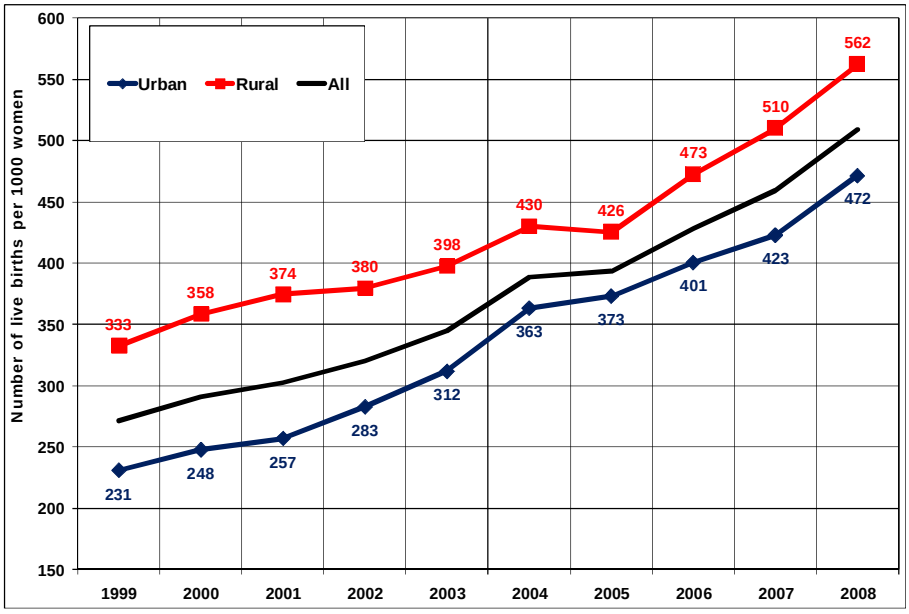
Figure 9 – Number of live births per 1000 women in the age group of 25-29 according to types of settlements in Kazakhstan from 1999 to 2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

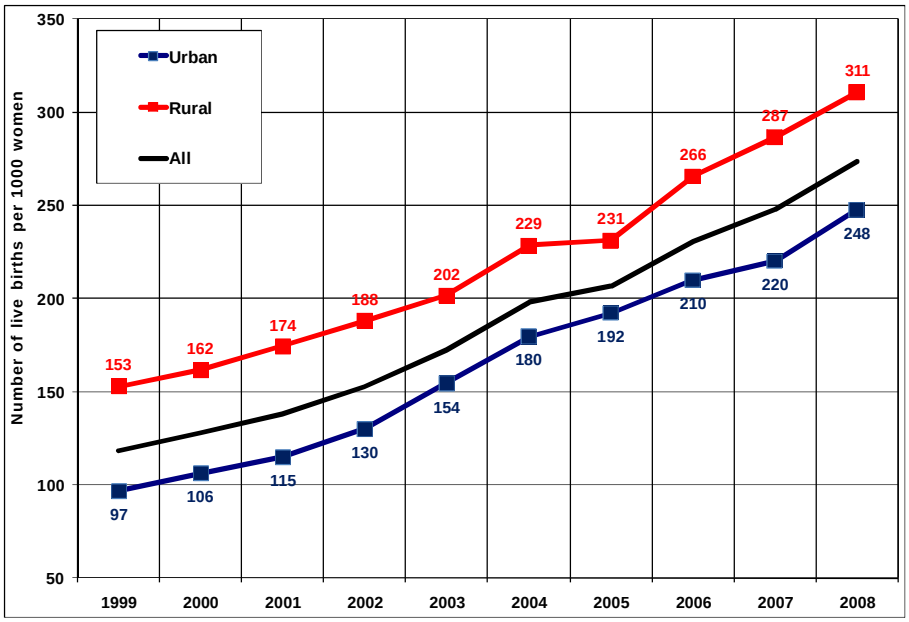
Starting from the age group of 30-34 till the end of the reproduction period, number of live births per 1000 women increased in Kazakhstan from 1999 to 2008. Consequently, in both cases of settlements there was an upward trend, although the age group of 45+ showed a fluctuation due to small numbers (see Figures 10-13).

Figure 10 – Number of live births per 1000 women in the age group of 30-34 according to types of settlements in Kazakhstan from 1999 to 2008



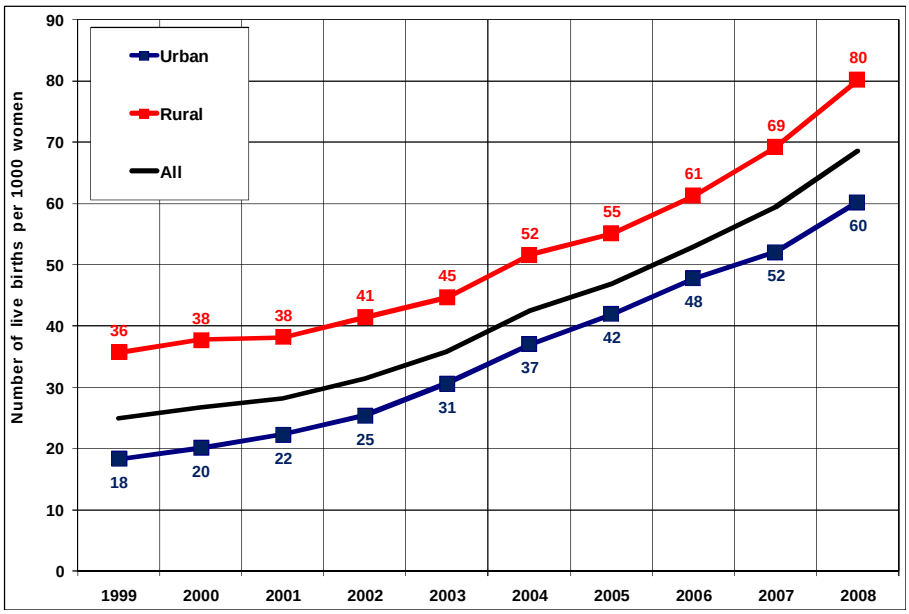
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of TFR starts with 16 years.

Figure 11 – Number of live births per 1000 women in the age group of 35-39 according to types of settlements in Kazakhstan from 1999 to 2008



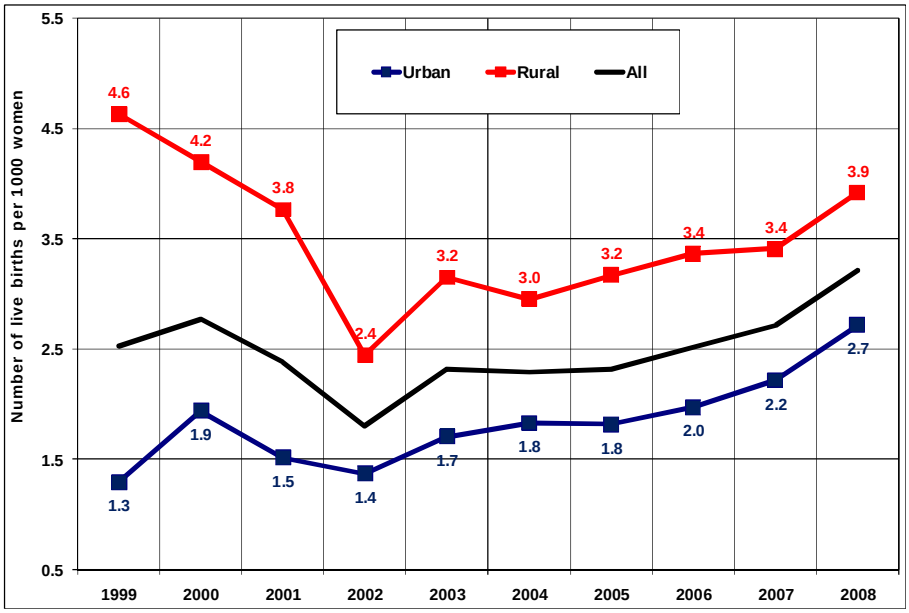
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

Figure 12 – Number of live births per 1000 women in the age group of 40-44 according to types of settlements in Kazakhstan from 1999 to 2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

Figure 13 – Number of live births per 1000 women in the age group of 45 and over according to types of settlements in Kazakhstan from 1999 to 2008



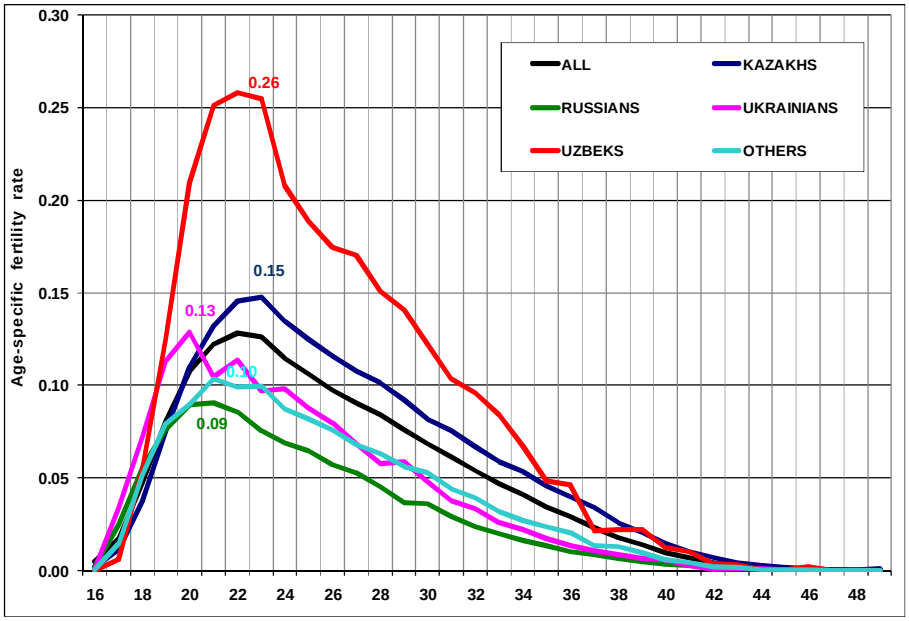
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of TFR starts with 16 years.

In short, the highest number of live births per 1000 women among all age groups was in the age group of 20-24 years and 25-29, and the lowest at 45+. Considering other figures, the intensity of fertility according to ethnicity will be examined, which will provide a more detailed information.

According to the data of the Statistics Agency of Kazakhstan, age-specific fertility rate by ethnicity was calculated only for the period of 1999-2006.

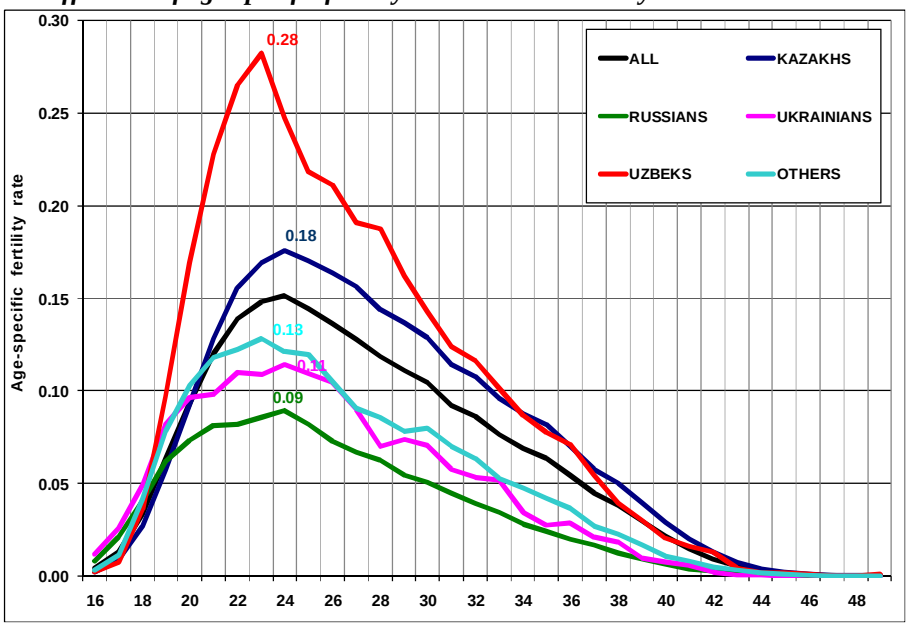
Figures 14 and 15 present the age-specific fertility rate according to ethnicity by age. Comparing two years – 1999 and 2006 – it can be noted that the highest intensity was observed in Uzbek ethnic group, whereas the lowest in Russian ethnic group. ASFR in all ethnic groups increased in 2006 in comparison to 1999.

Figure 14 – Differences of age-specific fertility rate between ethnicities in 1999



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR is started with 16 years.

Figure 15 – Difference of age-specific fertility rate between ethnicity in 2006



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR is started with 16 years.

Figures 16-21 illustrate each of the selected ethnic groups including others and all ethnic groups in 1999 and 2006. Kazakh ethnicity showed the highest point of age-specific rate in 1999 at the age of 23 and in 2006 it shifted to 24; Russian at 21 in 1999 and to 24 in 2006; Ukrainian at the age 20 in 1999 and it shifted to 24 in 2006; Uzbek at the age 22 in 1999 and in 2006 it shifted to 23; others ethnic groups at 21 in 1999 and in 2006 to 23. Eventually, each of them presented an increasing trend in age-specific fertility rate.

Figures 16-21 – Differences of age-specific fertility rate between 1999 and 2006 for each selected ethnicity

Figure 16

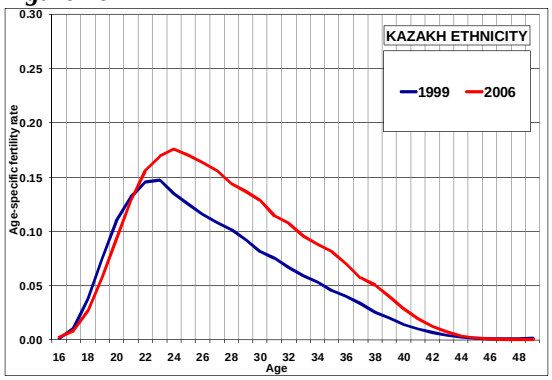


Figure 17

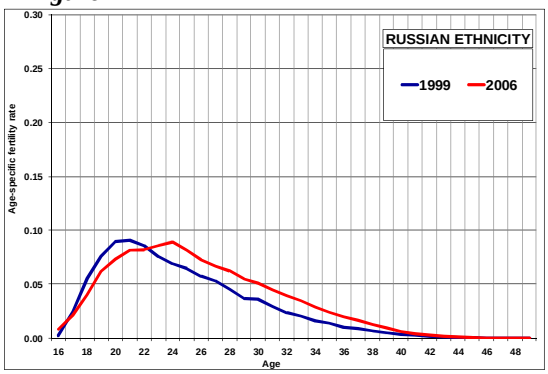


Figure 18

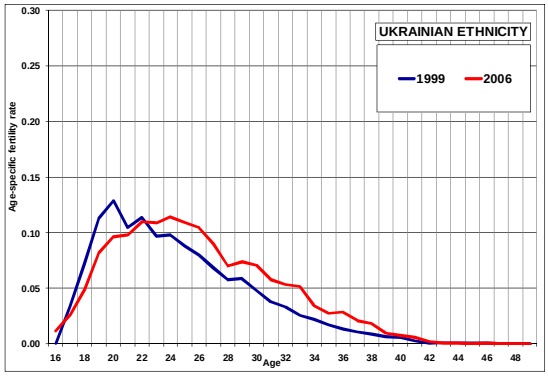


Figure 19

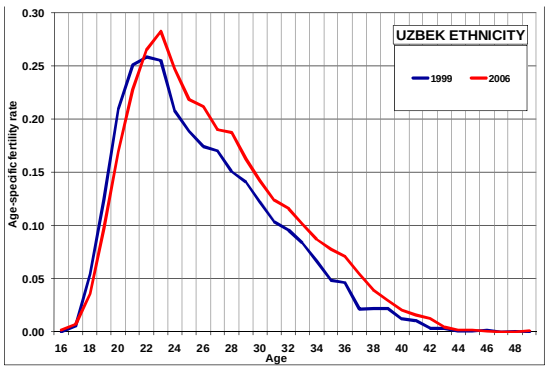


Figure 20

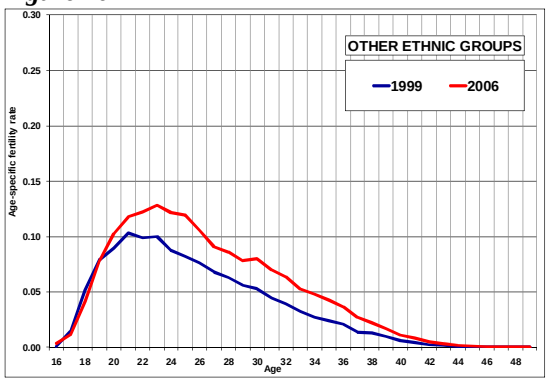
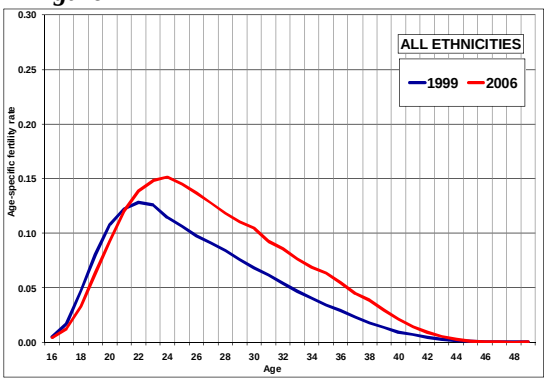


Figure 21



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

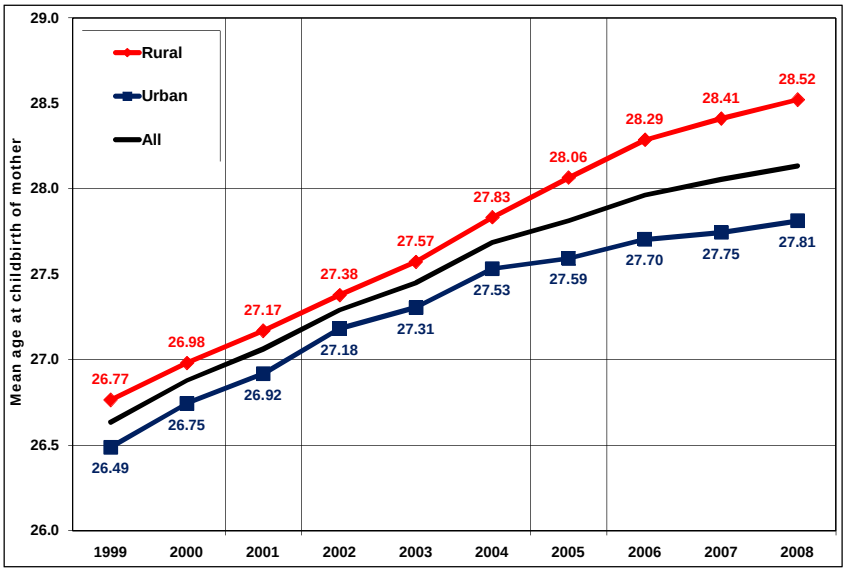
9.3 Differences in timing of childbearing

The age of mothers at childbearing can be estimated with the help of period data. The period mean age at childbearing of a group of women at the age 16-49 for a given year summarizes the age pattern of a hypothetical cohort of women who have their reproductive life births during 1999-2008. Thus, the mean age at childbearing is a general indicator of the timing of having a baby.

Kazakhstan shows an increasing trend of the mean age of childbirth in general. It can be explained in many different ways, but nowadays the most influential factor influencing fertility, as was mentioned above, is a trend of more women choosing to make a career. After graduating from high school, women do not hurry to get married and have children as many years ago. This trend is more typical for urban areas, however. Women in rural settlements also show an increasing trend in the mean age at childbirth.

Figure 22 illustrates urban, rural, and average trends of mean ages for each selected year. Urban area shows the lowest position, whereas rural area shows the highest one. This is due to the fact that women in rural areas have more children (of higher birth order) and obviously at older age. This difference has continued throughout the last years. In 1999 women, on average, gave birth at the exact age of 26.49 in urban settlements and at the age 26.77 in rural areas. In comparison to the end of the selected period, mean age at childbirth increased by 1.05 years in urban areas, by 1.07 in rural areas and by 1.05 for Kazakhstan as a whole. In spite of the fact that there were small disparities, it can be highlighted that this tendency has been observed for one decade only.

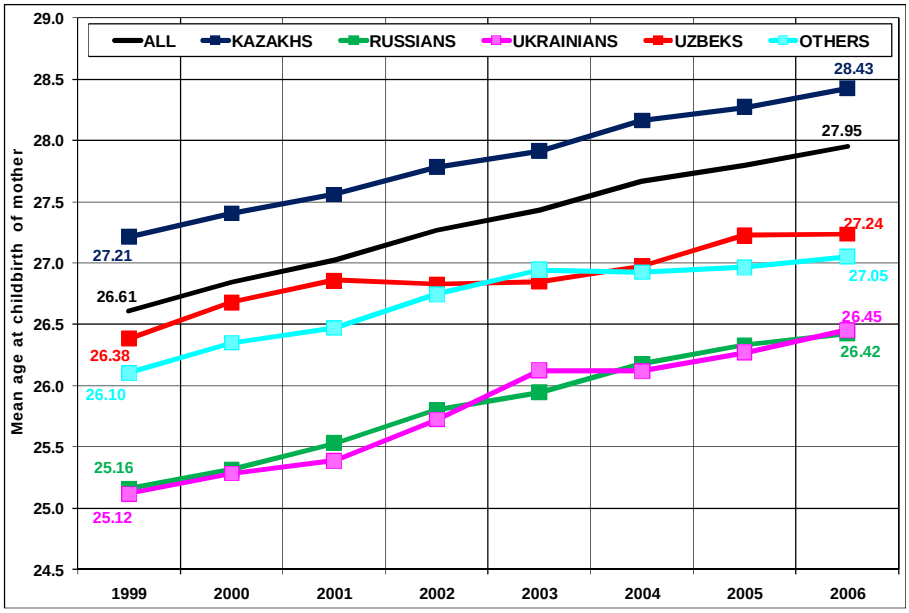
Figure 22 – Mean age at childbirth of mother for urban and rural settlements in Kazakhstan, 1999-2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

Now the situation will be considered in terms of ethnicities. Similarity between ethnicities exists among non-traditional ethnicities like Russians and Ukrainians. However, traditional and mixed ethnic groups showed absolutely distinct positions among all of them: Uzbeks present slightly fluctuating trend, whereas Kazakhs show a gradually increasing one and occupy the highest position in the mean age at childbearing among other ethnic groups during the 1999-2006 (see Figure 23).

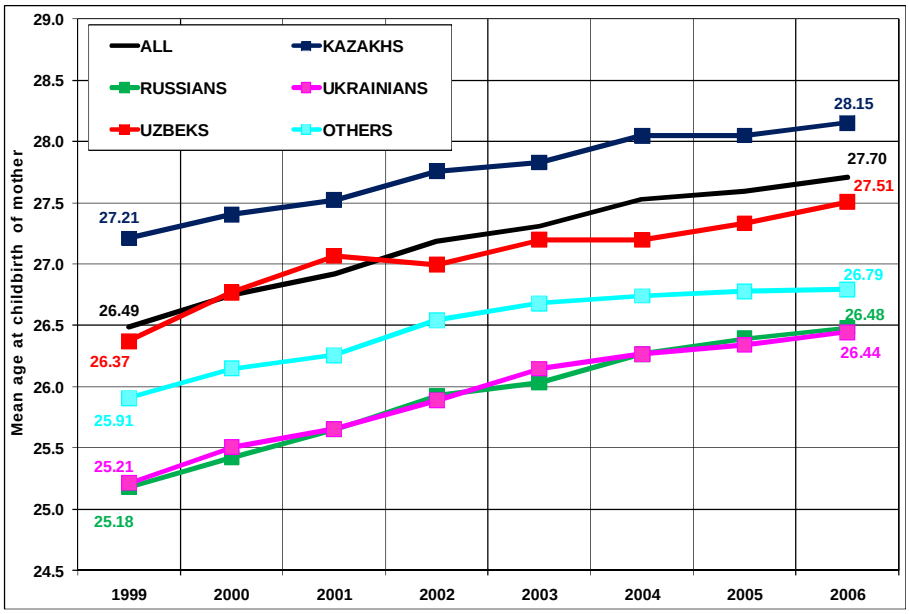
Figure 23 – Mean age at childbirth of mother according to ethnicity in Kazakhstan, 1999-2006



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

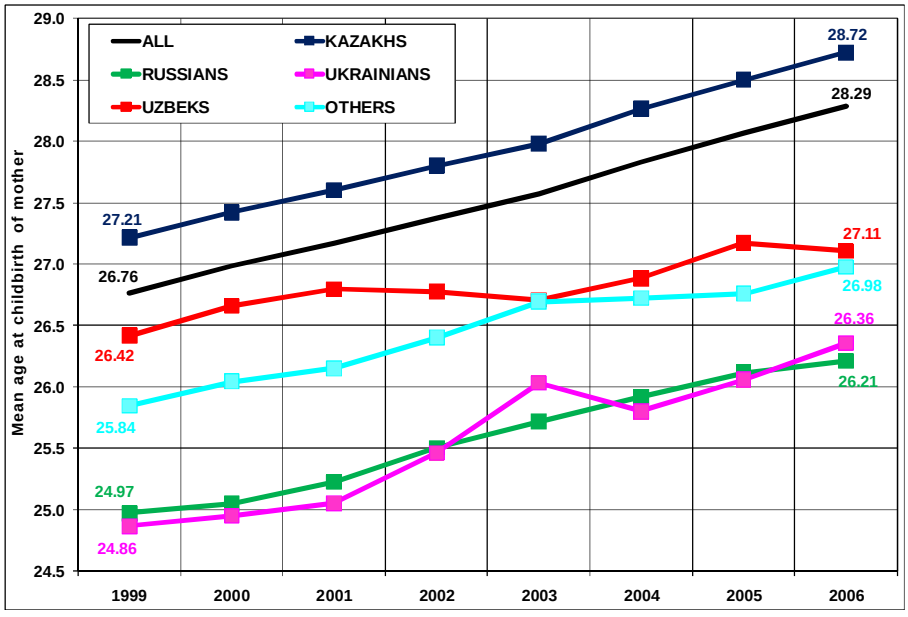
The trends of mean age at childbirth by each ethnicity for urban and rural areas illustrated almost similar tendency: in both areas the increasing trend and position of each ethnicity did not change (see Figure 24). However, the most important fact was that in rural areas this trend was more pronounced than in urban areas, e.g. in urban settlements in 1999 the mean age at childbirth was 26.49. In 2006 it reached 27.70, while in rural area it was 26.76 in 1999 and went up to 28.29 in 2006. Figure 25 illustrates an upward trend in each settlement for Kazakh, Russian, Ukrainian, Uzbek and other ethnic groups.

Figure 24 – Mean age at childbirth of mother according to ethnicity for urban area in Kazakhstan, 1999-2006



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

Figure 25 – Mean age at childbirth of mother according to ethnicity for rural area in Kazakhstan, 1999-2006

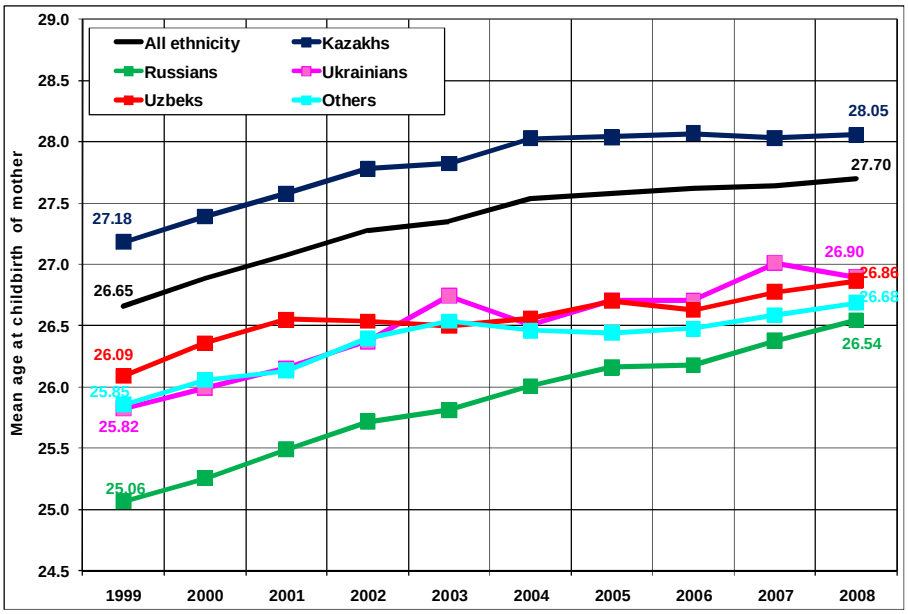


Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

Mean age at childbirth according to marital status of each ethnic group illustrated the following: in both cases women of the Kazakh ethnic group were the oldest, the youngest were women of Russian ethnicity from 1999 to 2008. The mean age in marital case was slightly higher than in the unmarried one. (see Figures 26 and 27) Mean age at childbirth

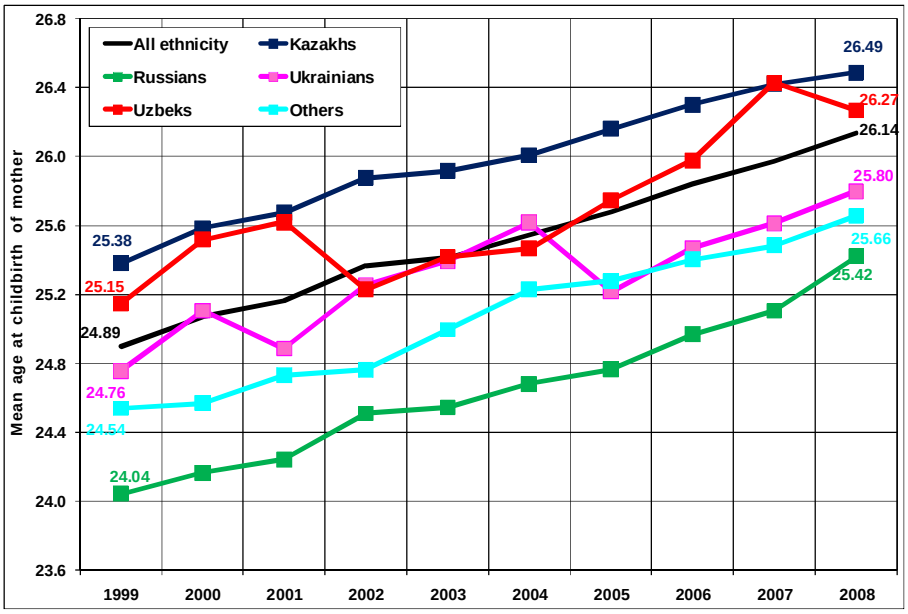
among unmarried women is lower because intensity of extramarital births was higher in those younger ages, which will be explained in the next paragraph.

Figure 26 – Mean age at childbirth of mother according to ethnicity of married women in Kazakhstan, 1999-2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

Figure 27 – Mean age at childbirth of mother according to ethnicity of unmarried women in Kazakhstan, 1999-2008



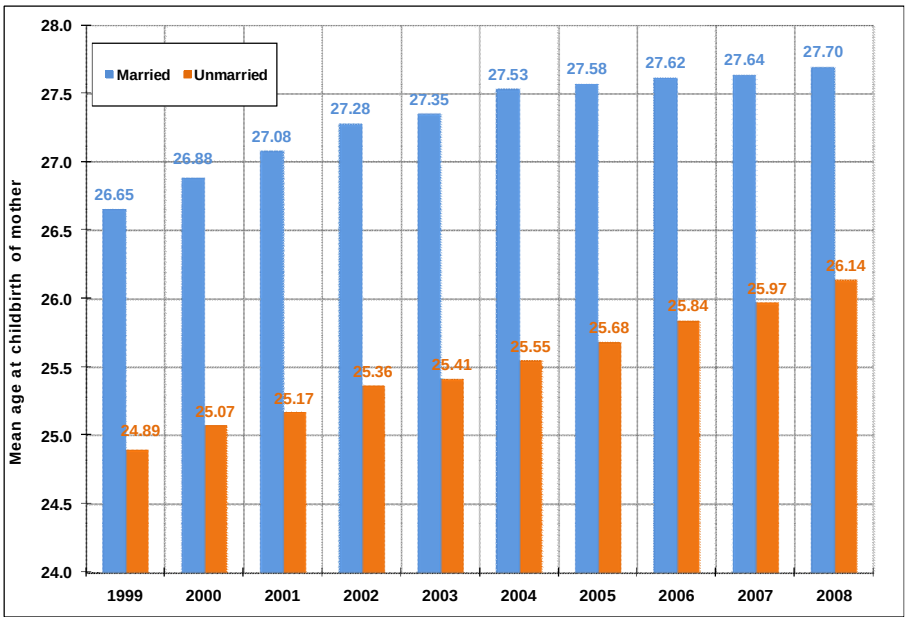
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16 years.

Figure 28 illustrates the mean ages at childbirth for marital and extramarital fertility from 1999 to 2008. The mean ages for marital fertility are higher than for non-married fertility. In addition, both mean ages showed an increasing trend. In the beginning of the considered

period, the mean age for married women was 26.65, for unmarried women it was 24.89, whereas in the end of the period that ages were higher. For married women it was 27.70 years, for unmarried – 26.14. However, the difference between them reduced – in 1999 it was 1.76 and in 2008 it decreased to 1.56 years.

The reason for younger mean age at childbirth of unmarried mothers would need more detailed division according to marital status, however the data related to "divorced", "widowed' and "never married" are not available. (see Chapter 8.3).

Figure 28 – The difference between mean ages at childbirths of mothers by marital status in Kazakhstan from 1999 to 2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.

In one word, the indicator of the mean age changed in Kazakhstan during the last decade. Kazakh and Uzbek ethnic groups are older among selected ethnicities. Regarding the marital status, it is seen that the mean age of the married and unmarried women increased.

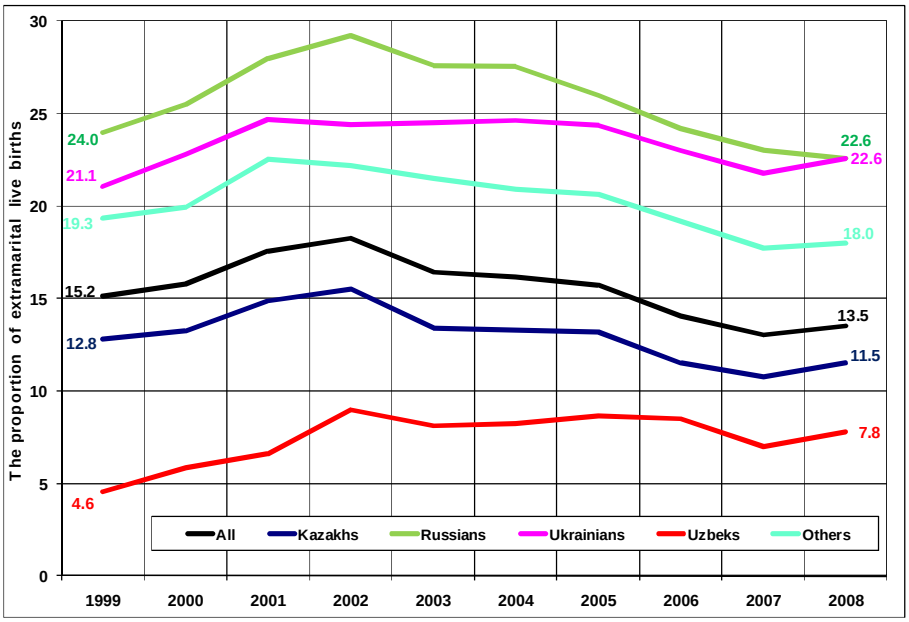
9.4 Peculiarities of extramarital fertility

Each ethnicity is distinctive in culture, traditions, values, demographic and social attitudes, all of which affect fertility. For example, in Kazakhstan, those ethnic groups that are more traditional, have more children and most of births are given in marriage. In contrast, those ethnic groups that are more modern, have less children and more frequently births outside marriage.

However, despite the fact that cohabitation partnership becomes more and more popular nowadays in many countries, this indicator decreased in Kazakhstan. According to ethnic differences, however, an upward trend was observed among some traditional ethnic groups (like Uzbek), which will be explained in the next paragraphs. Non-traditional ethnicities

(Russians and Ukrainians) show higher proportion of extramarital births compared to traditional ethnicities. Compared to 1999 with 2008 traditional Uzbeks show an increase (from 4.6 to 7.8), whereas non-traditional Russians (from 24.0 to 22.6), mixed-traditional Kazakhs (from 12.8 to 11.5) and other ethnic groups (from 19.3 to 18.0) show a decrease tendencies of the proportion of extramarital live births. However, non-traditional Ukrainians show a slightly increase from 21.1 to 22.6. Thus, traditional ethnicities experienced an increasing tendency of the proportion of extramarital births during the study period, while non-traditional ethnicities (Russians) show a slowly decreasing trend of the percentage of extramarital births (see Figure 29) (Dyussupova 2010).

Figure 29 – The proportion of extramarital live births (per 100) according to ethnicity in Kazakhstan, 1999-2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

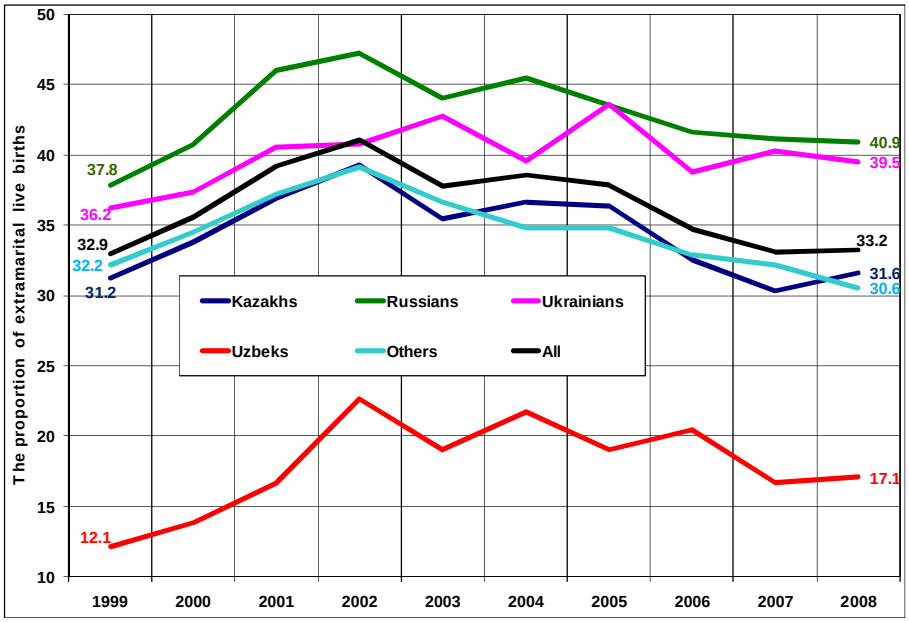
Having analyzed extramarital births by mother's age groups (16-19, 20-24, 25-29, 30-34, 35 and over), we have found out that the highest proportion of extramarital births were among the youngest age group and the lowest – among the oldest age group. Russian ethnicity displayed the highest percentage of extramarital births, whereas Uzbek ethnicity showed the lowest percentage in each age group during the 1999-2008. Moreover, each older age group displays lower percentage in the consecutive order.

Figures 30-34 show the proportions of extramarital births for each age group by ethnicity. In addition, table 4 shows the number of out-of-wedlock births between 1999 and 2008.

Figure 30 presents the trend of extramarital births according to ethnicity in the age group 16-19. As was mentioned above, the lowest percentage of extramarital births is typical among the Uzbek ethnic group, the highest – among Russians. However, the most important point is that the Uzbek ethnic group shows the highest upward tendency from 12.1 % in 1999 to 17.1 % in 2008, which is 1.41 times higher than the figure in the beginning of that period (see

Table 4). Between 1999 and 2008, the highest percentage of extramarital births was in 2002 among across all ethnic groups, excluding Ukrainian ethnicity, and after 2002 the tendency was slowly decreasing (Dyussupova 2010).

Figure 30 – The proportion of extramarital live births (per 100) according to ethnicity in the age group 16-19 in Kazakhstan, 1999-2008

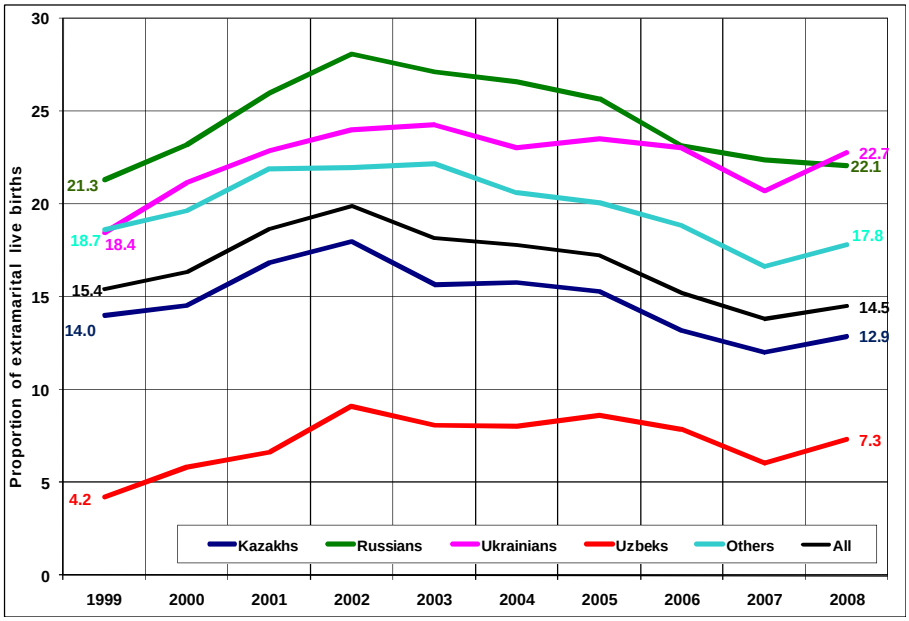


Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

The percentage of extramarital births of the next age groups 20-24, 25-29, 30-34 is relatively lower than in previous age groups, despite the fact that the graphs look similar (but the scale is different): the lowest level is observed among Uzbeks and the highest among Russian ethnic groups. In 2002 almost every ethnicity experienced the "peak" of percentage of non-marital births, but among Uzbek ethnic group it was in the age group 25-29 in 2005 and in the age group 30-34 in 2006 (see Figure 31, 32, 33 and 34).

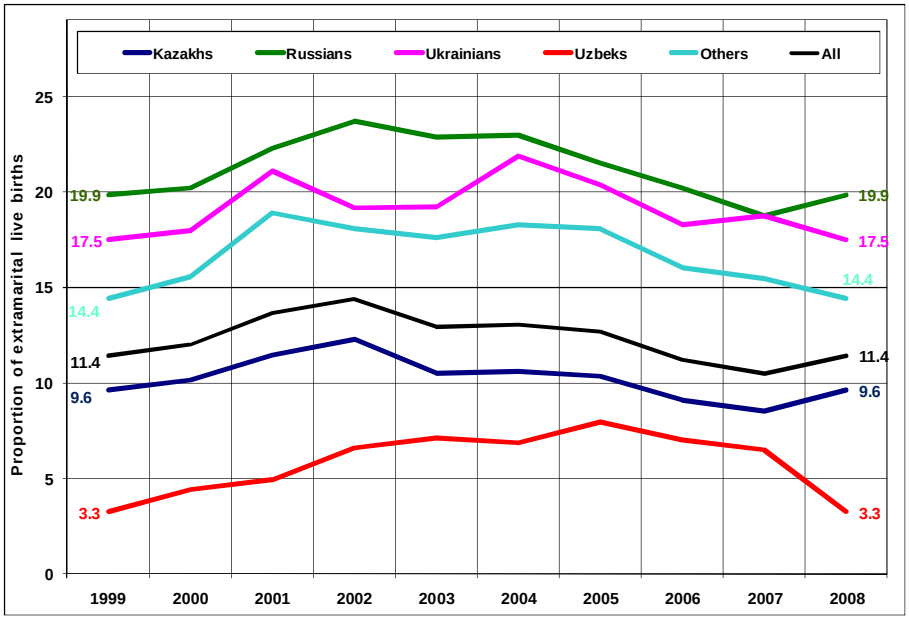
The oldest age group of 40 and over shows fluctuations due to the small numbers (see Figure 34).

Figure 31 – The proportion of extramarital live births (per 100) according to ethnicity in the age group 20-24 in Kazakhstan, 1999-2008



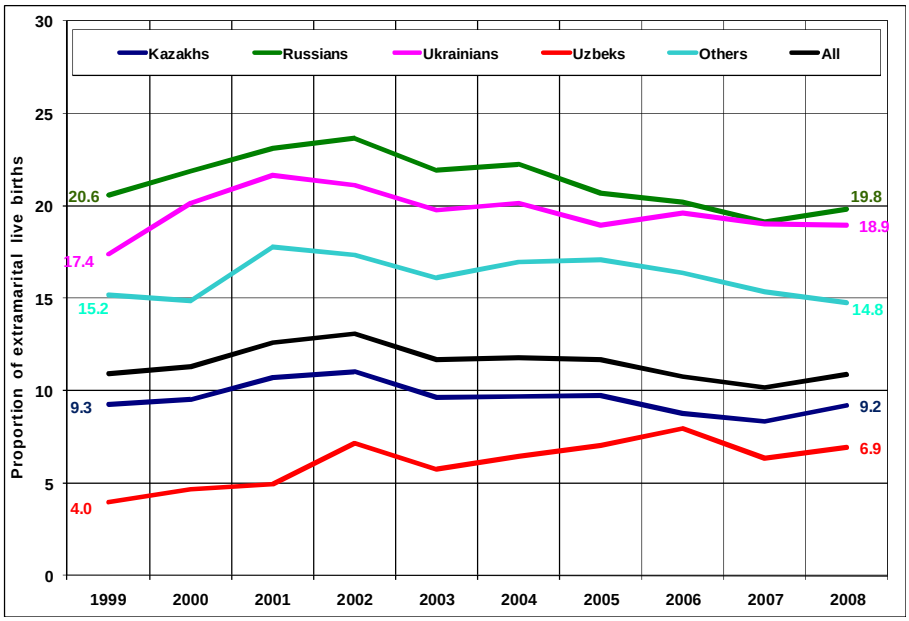
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

Figure 32 – The proportion of extramarital live births (per 100) according to ethnicity in the age group 25-29 in Kazakhstan, 1999-2008



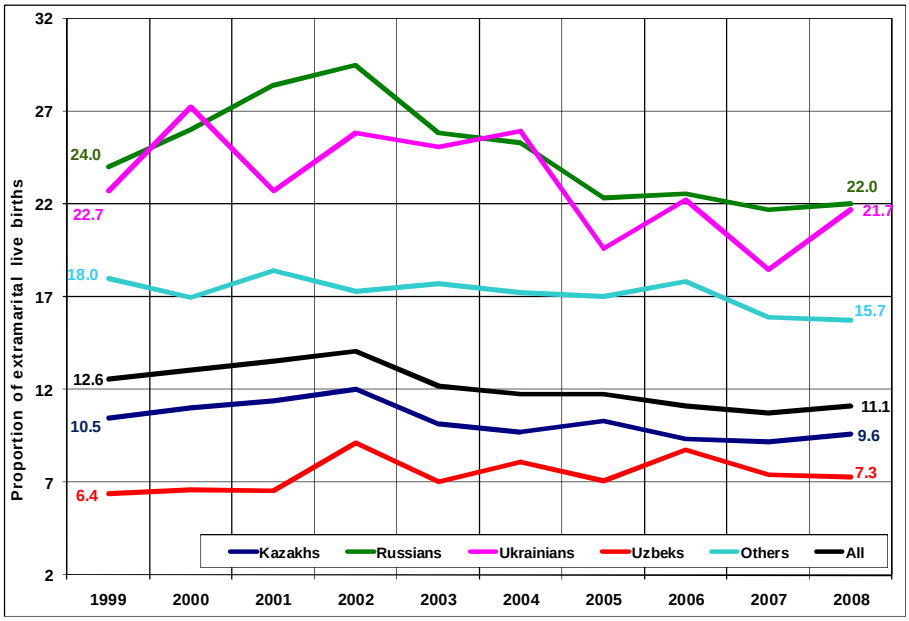
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

Figure 33 – The proportion of extramarital live births (per 100) according to ethnicity in the age group 30-34 in Kazakhstan, 1999-2008



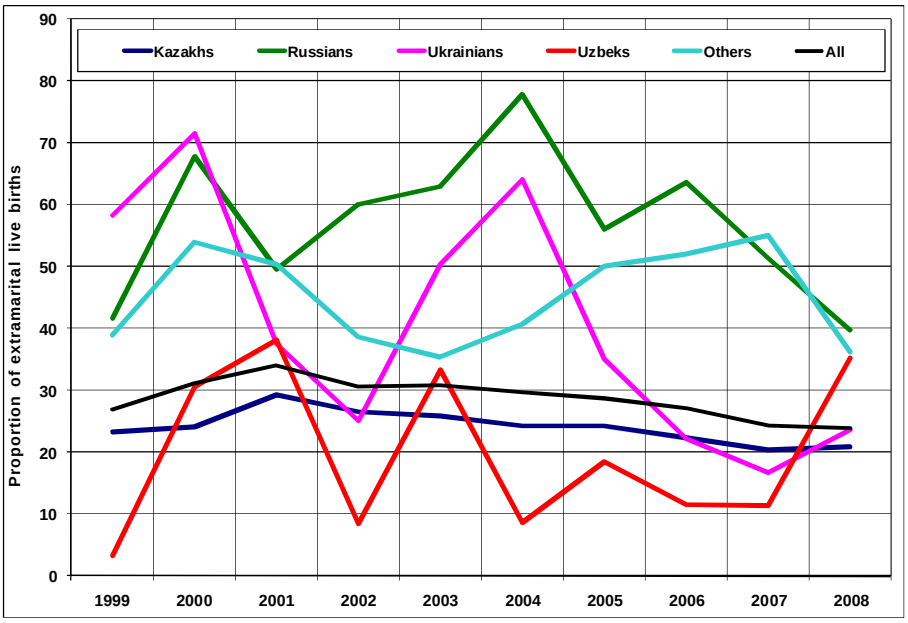
Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

Figure 34 – The proportion of extramarital live births (per 100) according to ethnicity at the group of 35-39 in Kazakhstan, 1999-2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

Figure 35 – The proportion of extramarital live births according to ethnicity in the age group 40 and over in Kazakhstan, 1999-2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

Unexpected pattern has observed in traditional Uzbek society that has experienced the fastest increase in the proportion of extramarital births (see Figure 36). The reasons behind the observation can be the following.

Firstly, the time pressure: transition from traditional to modern kind of family. Secondly, migration: the wave of illegal migrant workers of Uzbek ethnic group in Kazakhstan. Their number increased since 2000. "The problem of labor force migration from Central Asia is going to be more noticeable from year to year for Kazakhstan. In general, its character is illegal" reported Kazakhstan's newspapers (Newspapers), and it must be highlighted that every pregnant woman in Kazakhstan can deliver her child in a state-owned hospital without showing her passport, just providing her address, which is nowadays available for everyone in Kazakhstan. Moreover, illegal migrants cannot officially register their marriage in Kazakhstan (only have traditional weddings), that is why a child born in that kind of a family is registered as an extra-marital child (Dyussupova 2010).

In addition, the proportion of extramarital births showed that the increasing of the number of extramarital births can also be explained by more extended non-registered marriage, so-called "co-habitation", which is the reason why we cannot observe this kind of marriage.

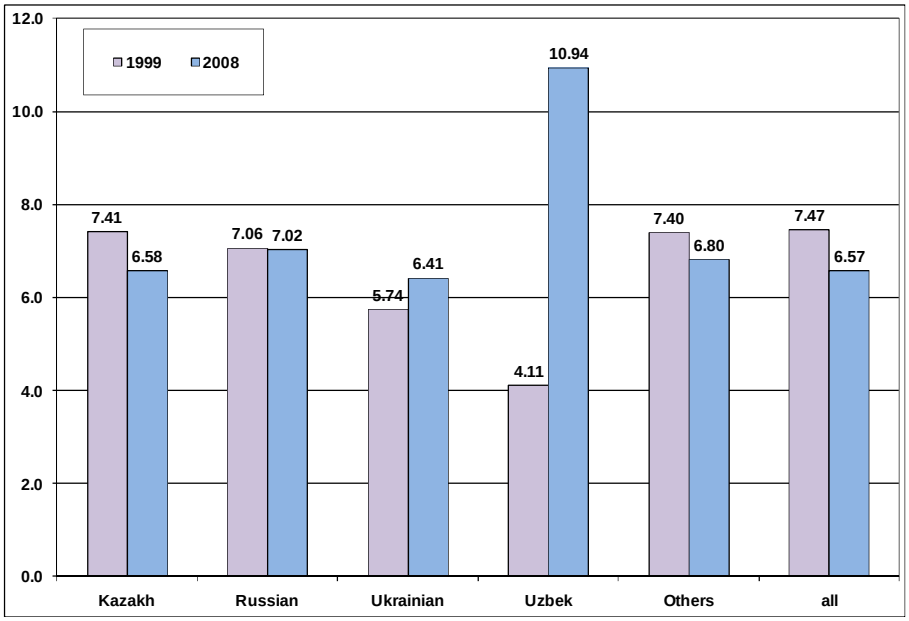
The difference of changing trend of extramarital fertility between 1999 and 2008 among Kazakhs was -0.83, among Russians it was -0.03, among Ukrainians it was -0.67, among Uzbeks it was 6.83, among others it was -0.59 and for all ethnic groups it was -0.90 (see Figure 36).

Table 4 – The change of the percentage of extramarital live births between 1999 and 2008 by age groups and ethnicity

		Kazakhs	Russians	Ukrainians	Uzbeks	Others	All
16-19	**1999**	31.24	37.82	36.19	12.14	32.20	32.94
	2008	31.63	40.93	39.47	17.11	30.57	33.20
	Ratio 2008/1999	*1.01*	*1.08*	*1.09*	*1.41*	*0.95*	*1.01*
20-24	**1999**	13.99	21.34	18.45	4.23	18.65	15.43
	2008	12.90	22.05	22.74	7.33	17.81	14.51
	Ratio 2008/1999	*0.92*	*1.03*	*1.23*	*1.73*	*0.96*	*0.94*
25-29	**1999**	9.60	19.85	17.47	3.25	14.41	11.41
	2008	9.60	19.85	17.47	3.25	14.41	11.41
	Ratio 2008/1999	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
30-34	**1999**	9.27	20.59	17.38	3.99	15.18	10.94
	2008	9.22	19.84	18.94	6.92	14.78	10.88
	Ratio 2008/1999	*0.99*	*0.96*	*1.09*	*1.74*	*0.97*	*0.99*
35-39	**1999**	10.47	24.04	22.73	6.36	17.97	12.59
	2008	9.61	22.05	21.70	7.31	15.71	11.13
	Ratio 2008/1999	*0.92*	*0.92*	*0.95*	*1.15*	*0.87*	*0.88*
40-44	**1999**	11.50	28.32	24.75	3.23	24.35	14.77
	2008	10.11	22.27	23.60	8.64	19.74	11.49
	Ratio 2008/1999	*0.88*	*0.79*	*0.95*	*2.68*	*0.81*	*0.78*
45+	**1999**	11.87	13.36	33.60	0.00	14.63	12.21
	2008	10.76	17.43	0.00	26.67	16.40	12.33
	Ratio 2008/1999	*0.91*	*1.30*	*0.00*	*0.00*	*1.12*	*1.01*

Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.

Figure 36 – The proportion of extramarital live births (per 100) of selected ethnicities in Kazakhstan between 1999 and 2008



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of the proportion starts with 16 years.

10.5 Differences in marital and extramarital fertility

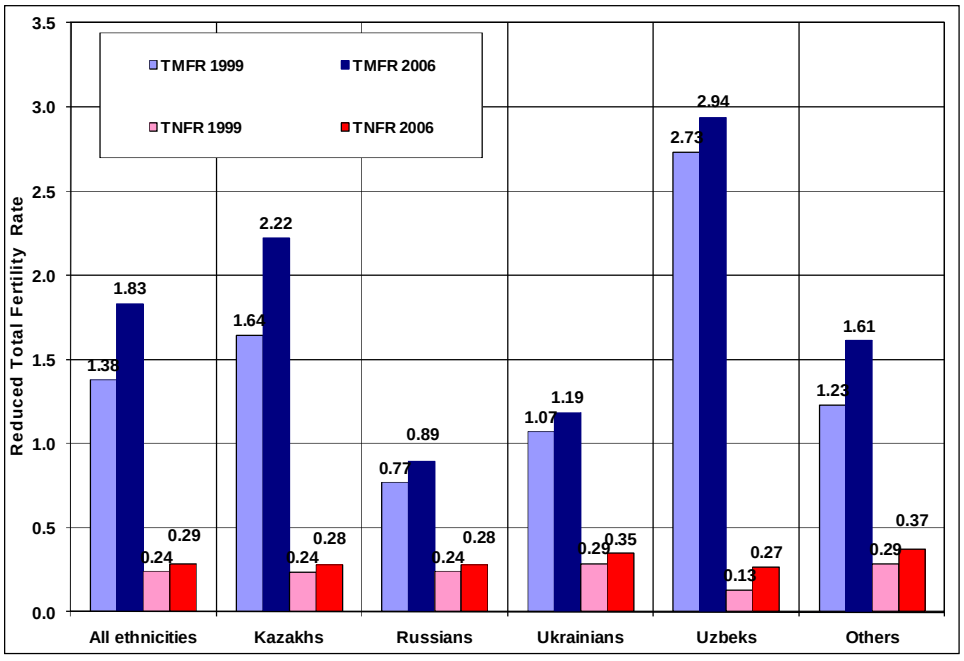
Having analyzed the general picture of fertility rates and proportion of extramarital fertility, it is necessary to look at the difference of reduced total fertility rates in 1999 and 2006 according to ethnicity and marital status (Table 5 and Figure 36). The difference between 1999 and 2006 in total marital fertility rate among Kazakhs was the biggest at about 0.6, and the lowest among Ukrainians at about 0.12. At the same time, the difference of total extramarital fertility rate was the highest among Uzbeks at about 1.14, and the lowest among Kazakhs – 0.04. In addition to reduced fertility rate, the differences in total fertility rate were observed, where the highest difference was among Kazakhs (0.61) and the lowest was among Russians (0.17).

Table 5 – The difference in reduced total fertility rates between 1999 and 2006 by ethnicity in Kazakhstan

	Total Marital Fertility Rate			Total Extramarital Fertility Rate			Total Fertility Rate		
	1999	2006	Difference	1999	2006	Difference	1999	2006	Difference
All ethnicities	1.38	1.83	0.45	0.24	0.29	0.05	1.62	2.12	0.50
Kazakhs	1.64	2.22	0.58	0.24	0.28	0.04	1.88	2.50	0.61
Russians	0.77	0.89	0.12	0.24	0.28	0.04	1.01	1.18	0.17
Ukrainians	1.07	1.19	0.12	0.29	0.35	0.06	1.36	1.53	0.17
Uzbeks	2.73	2.94	0.21	0.13	0.27	0.14	2.86	3.21	0.35
Others	1.23	1.61	0.38	0.29	0.37	0.09	1.51	1.99	0.47

Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.

Figure 37 – Reduced Total Fertility Rate according to ethnicity and marital status in Kazakhstan in 1999 and 2006



Source: Author's calculations based on the data from the Agency of Statistics of the Republic of Kazakhstan.
Note: The minimum age of ASFR starts with 16.
Note: TMFR – total marriage fertility rate (second kind). TNFR – total non-marital fertility rate (second kind).

To summarize, the observation of the proportion of extramarital live births by ethnicity in Kazakhstan showed specific background according to their demographic and societal attitudes and values. Recent changes in economic systems impacted fertility in cases of marital and extramarital live births. Stabilization of the economy can also be a reason behind an increasing number of extramarital births, because the births out-of-wedlock could occur

more frequently in the oldest age groups of women, suggesting a strategy of having child not for family, but "for themselves", which was explained by the increasing of the mean age at childbirths for unmarried women.

10.6 Main Findings

To summarize Section II of the dissertation, the main research questions (Q) and hypothesizes are as follows:

Q.1a What changes were in trends of marital and extramarital fertility in Kazakhstan and its urban and rural areas during the considered period from 1999 to 2008?

During the period of 1999-2008, the lowest level of total fertility rate was among the urban population. However, since 2005, the gap between urban and rural populations has narrowed due to the rapid increase of TFR in the urban areas.

Q.2a What were the shares in marital and extramarital fertility among ethnic groups in Kazakhstan during the 1999-2008?

The highest share in marital fertility was among traditional Uzbek ethnicity, whereas the lowest was among non-traditional Russian ethnicity. The number of extramarital fertility increased only among Uzbek ethnic group, whereas non traditional and mixed traditional ethnicities showed a decreasing tendency of the proportion of extramarital fertility.

Q.3a In the given research what types of ethnicity changed more during the 1999-2008: traditional or non-traditional?

According to all the observed tendencies, significant changes were not among all ethnicities, each of them showed an upward trend in total fertility rate. For example, in 1999 and 2006 TFR among Kazakhs increased from 1.88 up to 2.50, among Russians from 1.00 up to 1.18, among Ukrainians from 1.35 up to 1.53, among Uzbeks from 2.86 up to 3.21, even among other ethnic groups from 1.26 up to 1.69. Thus, the hypothesis "traditional ethnic groups became more modern" is not relevant, whereas the hypothesis "non-traditional ethnicities showed stable trends in marital fertility" is confirmed by the analysis of the research.

Q.4a What were the intensities in marital fertility by age structure of each ethnicity?

The intensity in marital fertility by age structure of the selected ethnicity was showed shifting towards older ages, for instance, Kazakh ethnicity showed the highest level of age-specific rate in 1999 at the exact age of 23 and in 2006 it shifted to 24; Russian at 21 in 1999 and to 24 years old in 2006; Ukrainian at the age 20 in 1999 and it shifted to 24 in 2006; Uzbek at the age 22 in 1999 and in 2006 it shifted to 23; others ethnic groups at 21 in 1999 and in 2006 to 23 years old. Eventually, each of them presented the increasing trend in age-specific fertility rate.

Q.5a What were the differences in marital and extramarital fertility between ethnicities?

The difference between 1999 and 2006 in reduced total marital fertility rate among Kazakhs was the highest at about 0.6, and the lowest among Ukrainians at about 0.12. At the

same time, the difference of total extramarital fertility rate was the highest among Uzbeks at about 1.14, and the lowest among Kazakhs – 0.04. In addition to reduced fertility rate, the differences in total fertility rate were observed, where the highest difference was among Kazakhs (0.61) and the lowest was among Russians (0.17).

Regarding the last research question about the reasons of changing trends of marital and extramarital fertility according to ethnicity in Kazakhstan during the considered period, it can be noted that the changes did not depend only on economic and political adjustments in Kazakhstan during the 1999-2008. Modernization, urbanization and education played their role in marital and extramarital fertility in Kazakhstan as well.

There are more marriages from year to year. For example, in 2000 the number of registered marriages was at about 90 thousand and in 2004 jumped to 115 thousand couples in Kazakhstan. In the capital of the country, Astana city, the registration staff works every day: even in the weekends people go to the registration ceremony (Info-tses). Having a baby is an important event for every woman, however, having a baby with his/her father, in a nuclear family, is more important for a child and child's future.

SECTION III
FERTILITY DIFFERENTIALS BY MARITAL STATUS AND EDUCATION ACCORDING TO ETHNICITY IN KAZAKHSTAN COMPARED TO UZBEKISTAN AND UKRAINE (DEMOGRAPHIC AND HEALTH SURVEY - DHS)

CHAPTER 10. DEMOGRAPHIC AND HEALTH SURVEYS IN KAZAKHSTAN, UZBEKISTAN, AND UKRAINE (DATA DESCRIPTION)

10.1 Survey description (the Measure DHS)

Since 1984, the MEASURE DHS (Demographic and Health Surveys) project has been providing technical assistance to more than 240 surveys in over 85 countries, advancing global understanding of health and population trends in developing countries. DHS has earned a worldwide reputation for collecting and disseminating accurate, nationally representative data on fertility, family planning, maternal and child health, gender, HIV/AIDS, malaria, and nutrition. The MEASURE DHS project is funded by the U.S. Agency for International Development (USAID). Contributions from other donors, as well as funds from participating countries, also support surveys. (http://www.measuredhs.com)

10.2 Kazakhstan Demographic and Health Survey, 1999 (KDHS)

The survey in Kazakhstan was conducted by the nationally representative standard individual questionnaire of the Demographic and Health Survey. The survey was implemented by the Academy of Preventive Medicine of Kazakhstan through an agreement with Macro International Inc. under the auspices of the MEASURE DHS+ project supported by the U.S.

Agency for International Development (USAID). Fieldwork for the KDHS was conducted from July to September 1999. Despite the fact that the main findings from the 1999 KDHS are maternal and child health and nutrition, the results also highlight the major changes that are taking place in Kazakhstan's demographic and health situation since the previous KDHS survey which was conducted in 1995.

4 800 women aged 15-49 across all regions of Kazakhstan have been interviewed. The ethnicities, such as Kazakhs, Russians, Ukrainians, Germans, Koreans, Tatars and others participated. However, for this study, only Kazakhs, Russians, Ukrainians were chosen and in the ethnic group "Others' all other ethnicities were summed by DHS, but in the Dissertation Germans, Koreans, Tatars and others are summed in the group "Others" . Through the survey marital statuses of women such as "never married", "married", "living together", "divorced", "widowed" and "not living together" were explored (detailed definition and information is given in Chapter 10.6). Birth order of children represents the number of children of each woman. The place of residence by urban and rural areas is included as well. In addition, the information on the levels of education attainment that consists from "no education", "primary education", "secondary education" and "higher education" was collected. In this case it is important to clarify the meanings of the levels of education due to the differences in European and post-Soviet standards of education. So, "primary" means basic (7-10 years; ISCED equivalent "Primary Education First stage of basic Education"), "secondary" – college or technical college or PTU(SPTU) (2-3 years over after the basic 9 or 10 years of education ISCED equivalent "Lower secondary education, Second stage of basic education", "(Upper) secondary Education" and "Post-secondary non tertiary education"); and "higher" means university degree or higher (ISCED equivalent First and Second stages of tertiary education). We describe the educational system in each country or provide here definitions from the survey including also ISCED equivalent. According to ISCED equivalent levels of education "No education" refers to "pre-primary" level, where the main criteria are educational properties, school or centre-based minimum age and upper age limit. "Primary education" refers to "Primary Education First stage of basic Education" by ISCED, where the main criteria are beginning of systematic apprenticeship of reading, writing and mathematics. "Secondary education" by ISCED refers to "Lower secondary education, Second stage of basic education", "(Upper) secondary Education" and "Post-secondary non tertiary education", where the main criteria are subject presentation, full implementation of basic skills and foundation for lifelong learning, typical entrance qualification. "Higher education" by ISCED refers to First stage of tertiary education (not leading directly to an advanced research qualification) and Second stage of tertiary education (leading to an advanced research qualification) where the main criteria are minimum entrance requirement also Entrance requirement; Content; Age; Duration, Research-oriented content; Submission of thesis or dissertation (http://www.uis.unesco.org).

10.3 Uzbekistan Demographic and Health Survey, 1996 (UZDHS)

The survey in Uzbekistan was conducted by nationally representative standard individual questionnaire of DHS. It was conducted by the Institute of Obstetrics and Gynecology, Ministry of Health of the Republic of Uzbekistan. Macro International Inc. provided technical assistance. Funding was provided by the U.S. Agency for International Development. The UZDHS is a part of the worldwide Demographic and Health Surveys (DHS) program, which is designed to collect data on fertility, family planning, and maternal and child health. Fieldwork was conducted from June to October 1996.

UZDHS interviewed 4 415 women at the age of 15-49 in all regions of Uzbekistan. Different ethnicities such as Uzbeks, Russians, Kazakhs, Tajiks, Koreans, Iranian, Karakalpaks, Turkmens, Tatars, Ukrainians and others participated. For this study only Uzbeks, Russians, Kazakhs, Ukrainians were chosen and in the ethnic group of "Others' all other ethnicities (Tajiks, Koreans, Iranian, Karakalpaks, Turkmens, Tatars) were summed. In the survey marital statuses of women as "never married", "married", "living together", "divorced", "widowed" and "not living together" were explored. However, never married women do not occur in the data. Birth order of children represents the number of children of each woman. The place of residence of interviewed women by urban and rural areas is included as well. In addition, the variable of the levels of education that consists from "no education", "primary education", "secondary education" and "higher education" was chosen. Likewise in KDHS's levels of education, "primary" means basic (7-10 years), "secondary" – college or technical college or PTU(SPTU) (2-3 years over after the basic 9 or 10 years of education) and "higher" – an university degree or higher.

10.4 Ukraine Demographic and Health Survey, 2007 (UKDHS)

The survey in Ukraine was conducted by the nationally representative standard individual questionnaire of DHS. It was carried out by the Ukrainian Center for Social Reforms (UCSR) in collaboration with the State Statistical Committee of Ukraine. Macro International Inc. provided technical assistance in the design, implementation, and analysis of the survey as part of the Demographic and Health Surveys project (MEASURE DHS). Funding for the survey was provided by the United States Agency for International Development (USAID). The 2007 Ukraine Demographic and Health Survey (UKDHS) was designed to provide data for monitoring the population and health situation in Ukraine. The 2007 UDHS is the first Demographic and Health Survey conducted in Ukraine.

UKDHS interviewed 6 841 women aged 15-49. Ethnicity of the interviewed women in Ukraine is missed. However, taking into account that in Ukraine Ukrainians are more than 75 per cent, in the Dissertation all observations as Ukrainians will be presented. Marital statuses of women "never married", "married", "living together", "divorced", "widowed" and "not living together" were explored. Birth order of children represents the number of children of

each woman. The place of residence of interviewed women by urban and rural areas is included as well. The levels of education are also considered - “no education”, “primary education”, “secondary education” and “higher education”. The same like in KDHS’s and UZDHS’s, levels of education “primary” means basic (7-10 years), “secondary” – college or technical college or PTU(SPTU) (2-3 years over after the basic 9 or 10 years of education) and “higher” – an university degree or higher.

10.5 Differences between Kazakhstan, Uzbekistan and Ukraine Demographic and Health Surveys

The difference in the KDHS, UZDHS and UKDHS data obviously exists. Firstly, in the years when surveys were conducted: in 1996 – Uzbekistan, 1999 – Kazakhstan, and in 2007 in Ukraine. However, the years share one common feature in that they describe the period when all surveyed countries – gained independence. 1996 and 1999 are the years of the first decade, whereas 2007 is a year of the second decade of being an independent country. Despite the fact that the difference in calendar years exists, fertility behavior of each selected country was country-specific during any period (see Figure 1, Chapter 10.1) – in traditional Uzbekistan the number of children per woman was the highest, in mixed traditional Kazakhstan – middle and in European Ukraine – the lowest level position.

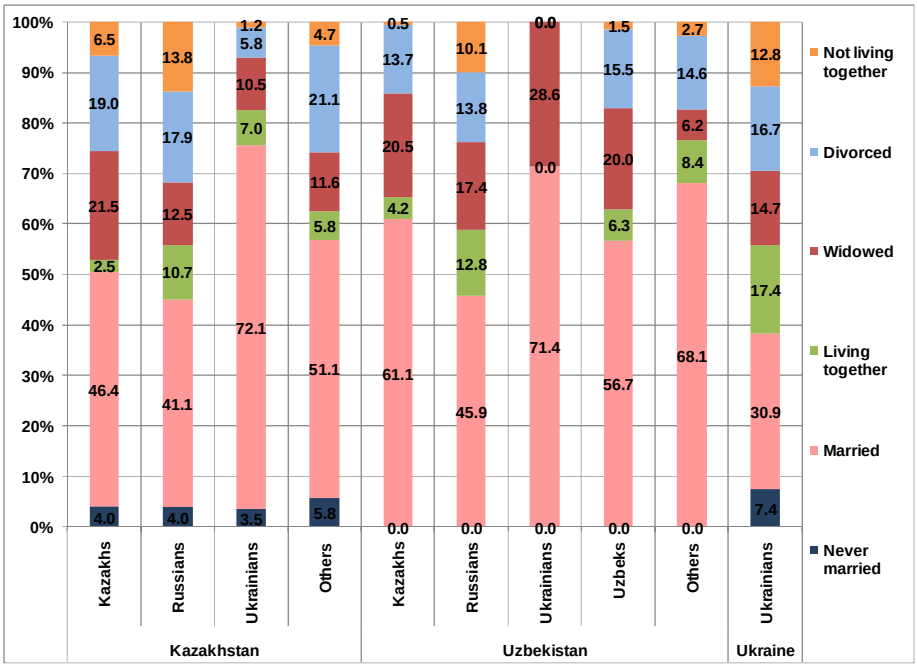
As far as the DHS data is concerned, each country is slightly distinguished by the data collected. Thus, in Ukraine DHS observations about ethnicity are missing, it can be explained by the fact that in Ukraine ethnicity point does not exist even in their official identity documents such as a passport. However, taking into account that in Ukraine Ukrainian ethnicity constitutes 77.8 per cent of the population (http://www.ukrcensus.gov.ua) it is possible to assume that the survey data are related mostly to Ukrainian ethnicity. It will take to analyze the “Ukrainians”.

In Kazakhstan DHS data about ethnicity doesn’t include the Uzbek ethnicity, it can be explained by the fact that in 1999, when the KDHS interviewed them, their number in Kazakhstan was less than 4% (www.stat.kz). Thus, they were included in the group of “Others”. The complete observations regarding ethnicity which is studied in this thesis is presented only in Uzbekistan DHS. There Uzbeks, Russians, Kazakhs and Ukrainians were included.

To conclude, in the descriptive part of the DHS data of the study we list the basic data analyses. So, the following statistical distributions were derived from the 1999 KDHS, 1996 UZDHS and 2007 UKDHS:

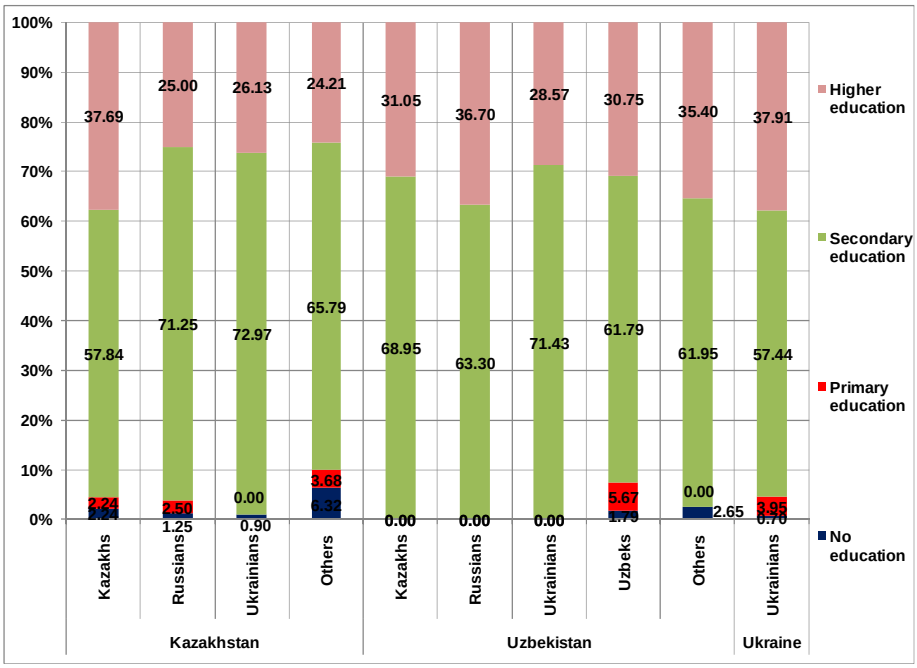
1. The percentage of women by marital status according to ethnicity (Figure 38);
2. The percentage of the number of women by education according to ethnicity in Kazakhstan (1999), in Uzbekistan (1996), in Ukraine (2007) (Figure 39);
3. The percentage of women by marital status and types of place residence according to ethnicity (Table 6).

Figure 38 - The percentage of the number of women by marital status according to ethnicity in Kazakhstan (1999), Uzbekistan (1996) and Ukraine (2007)



Data: DHS-1999, UZDHS-1996 and UKDHS-2007
Note: In UZDHS never married women do not reported themselves as "never married" (see Chapter 10.6)

Figure 39 – The percentage of the number of women by education according to ethnicity in Kazakhstan (1999), Uzbekistan (1996) and Ukraine (2007)



Data: KDHS-1999, UZDHS-1996 and UKDHS-2007

Table 6 - The percentage of the number of women by marital status and types of place residence according to ethnicity in Kazakhstan (1999), Uzbekistan (1996) and Ukraine (2007)

		Kazakhstan				Uzbekistan				Ukraine			
		Urban	**Rural**	**Urban %**	**Rural %**	**Urban**	**Rural**	**Urban %**	**Rural %**	**Urban**	**Rural**	**Urban %**	**Rural %**
Kazakhs	Never Married	12	10	0,6	0,4	0	0	0	0	.	.	.	.
	Married	1709	2593	86,8	91,6	58	58	51,8	74,4	.	.	.	.
	Living together	13	0	0,7	0,0	8	0	7,1	0,0	.	.	.	.
	Widowed	76	134	3,9	4,7	26	13	23,2	16,7	.	.	.	.
	Divorced	134	82	6,8	2,9	19	7	17,0	9,0	.	.	.	.
	Not living together	25	12	1,3	0,4	1	0	0,9	0,0	.	.	.	.
	Total	**1969**	**2831**	**100**	**100**	**112**	**78**	**100,0**	**100,0**				
Russians	Never Married	13	2	0,8	0,4	0	0	0	0				
	Married	1183	441	73,3	80,2	42	8	43,8	61,5	.	.	.	.
	Living together	51	26	3,2	4,7	14	0	14,6	0,0	.	.	.	.
	Widowed	91	27	5,6	4,9	14	5	14,6	38,5	.	.	.	.
	Divorced	218	35	13,5	6,4	15	0	15,6	0,0	.	.	.	.
	Not living together	59	19	3,7	3,5	11	0	11,5	0,0	.	.	.	.
	Total	**1615**	**550**	**100**	**100**	**96**	**13**	**100,0**	**100,0**	.	.	.	.
Ukrainians	Never Married	4	1	2,3	0,8	0	0	0	0	16	16	7,9	7,0
	Married	129	104	75,0	80,0	10	0	71,4	0,0	72	61	35,5	26,9
	Living together	3	11	1,7	8,5		0	0,0	0,0	28	47	13,8	20,7
	Widowed	10	12	5,8	9,2	4	0	28,6	0,0	30	33	14,8	14,5
	Divorced	23	2	13,4	1,5		0	0,0	0,0	35	37	17,2	16,3
	Not living together	3	0	1,7	0,0		0	0,0	0,0	22	33	10,8	14,5
	Total	**172**	**130**	**100,0**	**100,0**	**14**	**0**	**100,0**	**0,0**	**203**	**227**	**100,0**	**100,0**
Uzbeks	Never Married	.	.	.	.	0	0	0	0	.	.	.	.
	Married	.	.	.	.	99	91	55,6	58,0	.	.	.	.
	Living together	.	.	.	.	19	2	10,7	1,3	.	.	.	.
	Widowed	.	.	.	.	31	36	17,4	22,9	.	.	.	.
	Divorced	.	.	.	.	25	27	14,0	17,2	.	.	.	.
	Not living together	.	.	.	.	4	1	2,2	0,6	.	.	.	.
	Total					**178**	**157**	**100,0**	**100,0**				
Others	Never Married	7	4	1,6	1,0	0	0	0	0				
	Married	330	353	77,5	86,7	67	87	55,4	82,9	.	.	.	.
	Living together	7	5	1,6	1,2	13	6	10,7	5,7	.	.	.	.
	Widowed	27	14	6,3	3,4	14		11,6	0,0	.	.	.	.
	Divorced	51	31	12,0	7,6	24	9	19,8	8,6	.	.	.	.
	Not living together	4	6	0,9	1,5	3	3	2,5	2,9	.	.	.	.
	Total	**426**	**407**	**100**	**100**	**121**	**105**	**100,0**	**100,0**	.	.	.	.

Data: KDHS-1999, UZDHS-1996 and UKDHS-2007

10.6 Marital status of women

Marital statuses of women according to the DHS data were divided into five categories: "Never married", "Married", "Living together", "Widowed", "Divorced" and "Not living together". Each study country has different conceptions about woman's marital statuses. That is why this chapter will be concentrated on each marital status of women with their comparison across the selected countries.

"Never married"

Never married refers to those people who report themselves as never married. Children born from never married women usually represent dominant part of extramarital births. Country specifications of never married woman depend on the ethno-cultural background of the women in this status. For instance, traditional Uzbek society does not accept births out of marriage or out of wedlock because it can be associated mostly with light-mindedness or, moreover, as an immoral behavior of women. That is why in the answer sheet of questionnaire there are no women with never married statuses (taking into account that childless women were excluded) in Uzbekistan, because usually female respondents are ashamed of such status and can report themselves under the marital status "not living together" or "living together" which are not official in case of checking their marital statuses. On the other hand, it can influence other ethnic groups which are not the majority in the country. Moreover, Uzbek ethnicity is much more traditional than Russian or Ukrainian. Those European Russians and Ukrainians in Uzbekistan can also adopt such behavior or opinion about the women that give births out of marriage. Despite the fact that emigrated Uzbeks from Uzbekistan and those who live in other countries are far from their country, they keep their ethnic and cultural values.

Kazakhstan is considered to be a country of where various traditions are present and it is difficult to interpret Kazakhstan as a traditional one. Births from those women who were never married are accepted according to their type of community in Kazakhstan.

The acceptance of births from never married women in Ukraine is not unusual. However, the number of children born by never married women is relatively lower, as stated in this dissertation.

"Married"

Married refers to people who were currently officially married at the time of survey. Among all marital statuses, married is the dominant kind of partnership, especially in traditional societies. However, in traditional societies, "married" doesn't mean official registration and can refer to those who just celebrated a wedding ceremony. In the selected countries, most number of children are born within marriage, and most likely, it will never replace other marital statuses, not only of women, but of men as well.

"Living Together"

The situation when the cohabitation partnership is going to be a modern kind of family can be more clearly seen in that marital status. In vital and other statistics it is problematic to observe

cohabited partners whereas in such surveys it is more clearly visible. That is why marital status "Living together" in the survey delivers the most significant piece of information. According to the DHS, women who live together with their partners associated them with real husbands or fathers of their children (almost among traditional ethnicities). In Kazakhstan, couples living together are more prevalent among illegal migrants from different countries, those who cannot register their marriage. On the other hand, it is most likely that those people from non-traditional ethnicities who live together gather experience of living together before registering their marriages and do not want to obligate each other financially.

"Widowed"

"Widowed" refers to people who have lost their partner by death. Kazakhstan is one of the countries where excess male mortality rate is much higher than in other ones. (Becker, Urzhumova, 2004) That is why widowed women in Kazakhstan are much younger than women in the other selected countries. In Kazakhstan and Uzbekistan, widowed women have a higher average birth order comparing to Ukraine due to the fact that belong to populations with higher completed fertility rate. More frequent widowhood could be also explained by the effects of the collapse of USSR: import of new speedy car models and unrepaired roads, on the one side, increasing number of racketeers – again due to the unemployment took wide place in that countries during the 1990th. Those factors have contributed to the reinforcement of excess male mortality.

"Divorced"

"Divorced" refers to marriages that legally ended or ended through religious arrangements. Divorced women are usually less likely to give births in the future comparing to never married women because divorced can already have children while unmarried can have children later. Country specifications are also important to describe the divorced. Usually women from traditional ethnicities try harder to avoid divorce, in order to be more respectable in their society; however, in this survey it seems differently (Figure 41). Kazakh women in Uzbekistan showed the highest average birth order comparing with Uzbeks and Ukrainians. The reasons behind them could be different – time pressure – when the Soviet society is collapsed women became more street trading market so-called "bazaar" and men became more unavailable to earn and it could be one of the most faced occurrences.

"Not Living Together"

In fact, the marital status "Not living together" cannot be interpreted as a marital status due to the different places of living of partners or spouses. It can be more associated with divorced or unmarried women. However, it is only one way to observe those couples, who in reality are not officially in divorce but live separately. It concerns either traditional mixed and non-traditionally countries as well. The information about those who are not living together at the time of the DHS survey can also provide the observation that those women who are "second" or wives of polygamists. Almost all such marital behaviors occur among Muslim religious

societies, and almost traditional Uzbeks and mixed traditional Kazakhs profess Islam. However, despite the fact that Christianity strictly prohibited polygamous family, among European ethnicities (most of them are Christians) it takes place as women who are “lovers”. Thus, women who put in the answer-sheet as she did not live together with her partner or husband can be so-called wife of polygamist or “lover”.

CHAPTER 11. DESCRIPTIVE FINDINGS OF FERTILITY BEHAVIOR

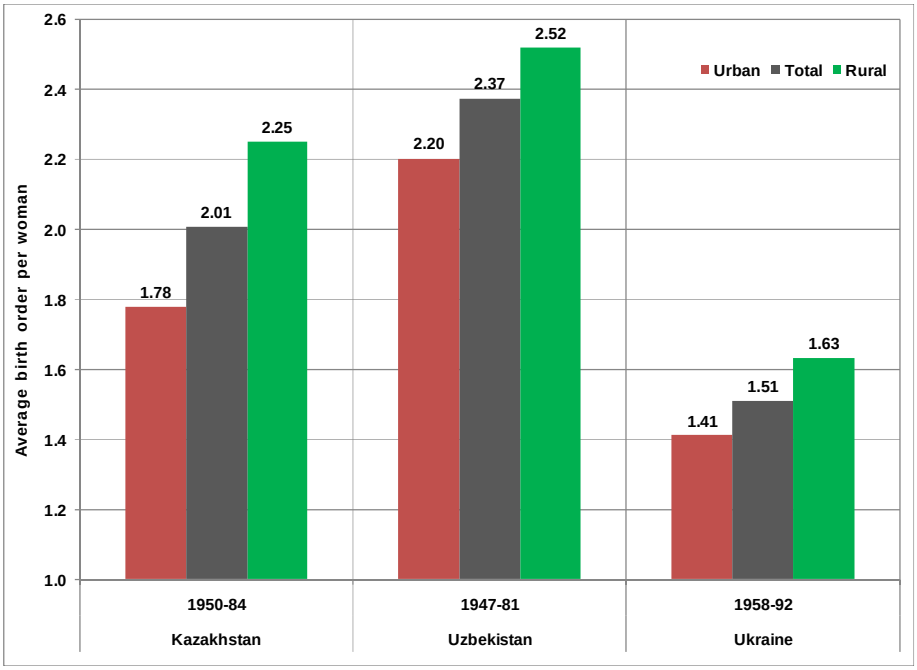
11.1 Birth order difference from country perspectives

Kazakhstan, Uzbekistan and Ukraine have their country-specific fertility patterns due to their ethno-cultural differences. In the selected countries only Ukraine consists of almost one titular ethnicity, outside Ukraine the Ukrainian ethnic group can provide the direct comparison of fertility behavior between titular Ukrainians and not titular ones. The representative number of not titular Kazakhs lives only in Uzbekistan, so their fertility behavior will be compared only with Uzbekistan's Kazakh ethnic group. Uzbeks will not be compared with not titular Uzbek ethnicity due to DHS data (see Chapter 10.5). Each comparable selected ethnicity can give the general picture of their fertility behavior by marital status. On the other hand, it is most likely to observe the influence of country specifications on the not titular ethnic groups.

The average birth order in the selected countries is shown in Figure 40. This average birth order can be to some extent influenced by the different age structure of studied subgroups. However, in the next chapter dealing with multidimensional modeling the average birth order will be standardized for age and other factors. There are average birth order in Uzbekistan was on the highest level at about 2.37, whereas in Kazakhstan is lower – 2.01 and in Ukraine the lowest one – 1.51. In addition, in all selected countries, represented there, women in urban areas have fewer children (lower average birth order) than in rural settlements: Kazakhstan in urban is 1.78, in rural – 2.25; Uzbekistan in urban is 2.20, in rural – 2.52; Ukraine in urban is 1.41, in rural areas – 1.63.

Due to the differences in calendar years of surveys, it is necessary to clarify the years of the birth of women. Therefore, birth cohorts of the interviewed women were in Kazakhstan 1950-84, in Uzbekistan – 1947-81 and in Ukraine – 1958-92.

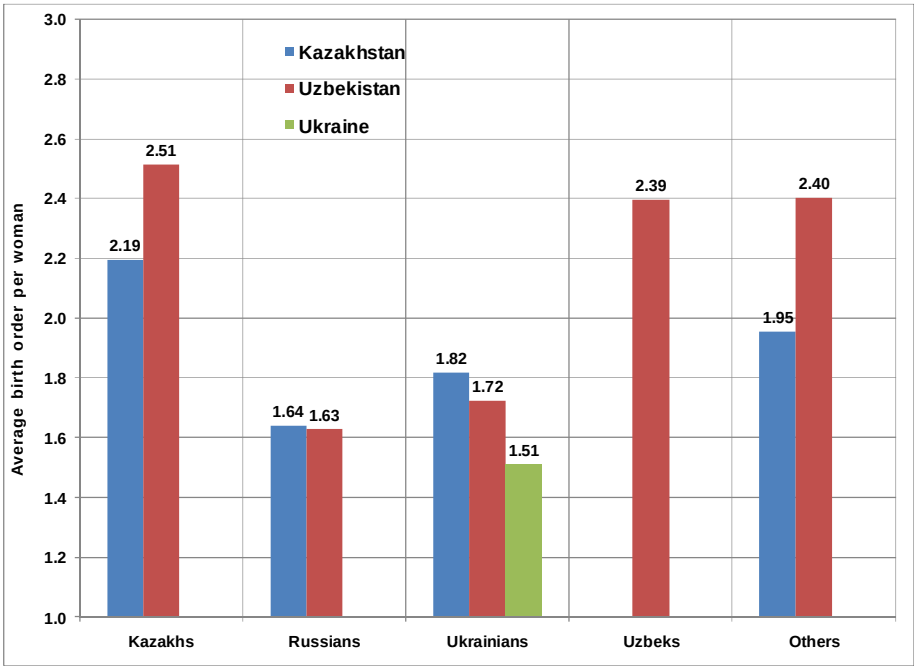
Figure 40 - Average birth order per woman by type of residence in Kazakhstan-1999, Uzbekistan-1996 and Ukraine-2007



Data: Author's calculation based on the DHS data.
Note: Childless women are excluded; birth cohorts in Kazakhstan – 1950-84, in Uzbekistan – 1947-81 and in Ukraine – 1958-92.

Ethnic differences in the average birth order are shown in Figure 41. There the titular Kazakh women have fewer children (2.19) than their co-ethnic women in Uzbekistan (2.51), whereas Russians in Kazakhstan have almost the same average birth order at about 1.64 in Kazakhstan and in Uzbekistan at 1.63. Ukrainian women showed the lowest one in Ukraine at 1.51, the highest in Kazakhstan at 1.82 and in Uzbekistan they were in the middle – 1.72. Therefore, Kazakh women gave more births outside of Kazakhstan than in the country, Ukrainian women also gave fewer births in Ukraine than out of it (in Kazakhstan on 0.10, in Uzbekistan on 0,19). Russian women in Kazakhstan gave almost the same average birth order with the slight difference on 0.1.

Figure 41 - Average birth order per woman according to ethnicity in Kazakhstan-1999, Uzbekistan-1996 and Ukraine-2007



Data: Author's calculation based on the DHS data.
Note: Childless women are excluded; birth cohorts in Kazakhstan – 1950-84, in Uzbekistan – 1947-81 and in Ukraine – 1958-92.

11.2 Birth order difference according to marital status

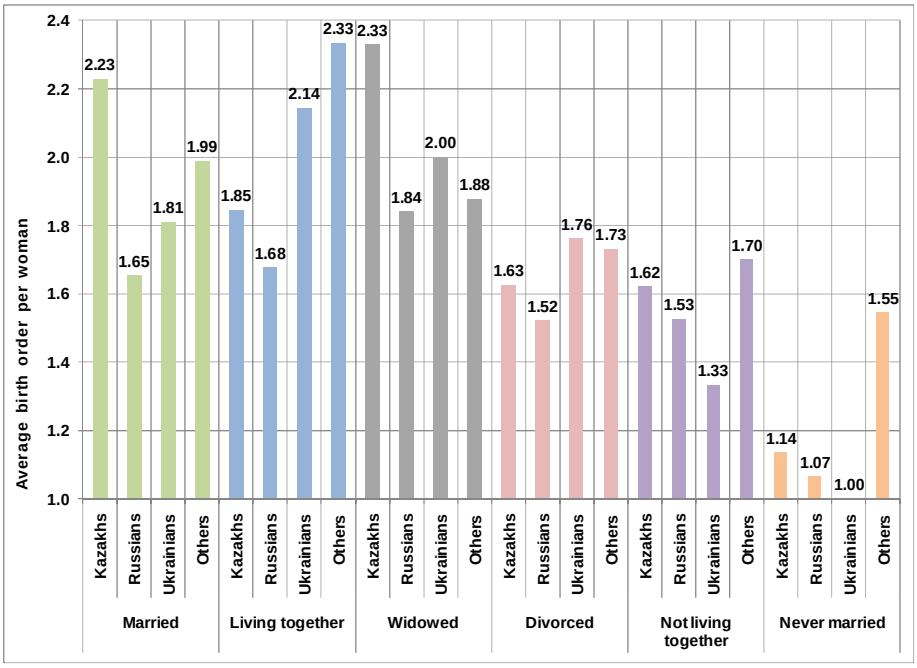
Although marital status of women plays an important role in every woman's decision to have a child, it is noticeably distinguished in their ethno-cultural background according to the DHS data. For example, in Kazakhstan, only mixed traditional married Kazakhs show the highest average birth order per woman at 2.23 among the selected ethnicities. Married Russians and Ukrainians show the level of 1.65 and 1.81 which are below the replacement level and others ethnicities – 1.99 (see Figure 42).

According to the marital status "Living together" in Kazakhstan, Ukrainians represented the highest level (after ethnic groups of others) at 2.14, whereas among Kazakhs the average birth order per woman is 1.85 and Russians – 1.68. At the same time, widowed Kazakh women are at the level 2.33 which is the highest among all ethnicities and all marital statuses. Widowed Ukrainian women also show one of the highest levels among ethnicities and marital statuses, which at the level of 2.0. Russian women of marital status "widowed" show the lowest among ethnicities, but the highest among other marital statuses of Russians – 1.84 (see Figure 42).

The average birth order per divorced woman is the highest among Ukrainians (1.72), the lowest among Russians (1.52). Kazakhs show the level at 1.63. At the same time, Kazakh women who are in the "Not living together" status show the highest level of 1.62 comparing to Ukrainians (1.33) and Russians 1.53 Those Kazakh women who have never been married

experienced 1.14 as the average birth order per woman, whereas never married Russians and Ukrainians are at the level of about 1.07 and 1.0 and others showed the highest one – 1.55 (see Figure 42).

Figure 42 – Average birth order per woman by marital status according to ethnicity in Kazakhstan, 1999

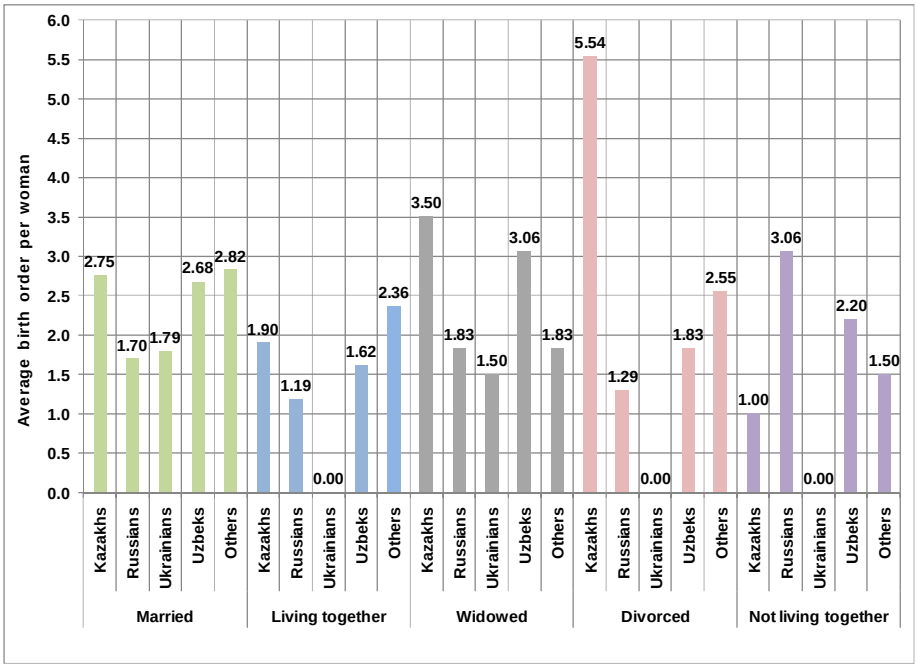


Data: KDHS-1999
Note: Childless women are excluded; birth cohorts in Kazakhstan – 1950-84.

Ethnic differences in the average birth order per women by marital status in Uzbekistan are obviously distinguished from Kazakhstan's one. Thus, comparing to other marital statuses of women, the married ones have the highest average birth order per woman among Uzbeks (2.68), Kazakhs (2.75) and others (2.82); whereas Ukrainians (1.79) and Russians (1.70) show slight difference between them and lower levels. According to the marital status of women "Living together", the average numbers of children per woman is the highest among others (2.36) and Kazakhs (1.9), lower is among Uzbek ethnicity (1.62) and the lowest is among Russians (1.19), Ukrainians are at the zero point (see Figure 43).

It is obvious from Figure 43 that the average birth order per woman among widowed Kazakh women is the highest (3.50) and widowed Uzbek one also show a high one (3.06) comparing with widowed Russians (1.83), Ukrainians (1.50) and others (1.83). Among divorced women according to ethnicity, the average birth order per woman is the highest 5.54 which is achieved by Kazakhs. Even divorced Uzbeks (1.83) are not at such a high level as divorced Kazakhs. Among divorced "other" ethnic groups, the average birth order per woman equals to 2.55 and Russian woman show the lowest one – 1.29, however, divorced Ukrainian women do not appear there. Regarding those who gave births in the marital status "not living together", it is obviously seen that Russians represents the highest level – 3.06, Uzbeks and others lower – 2.20 and 1.50 and the lowest one – 1.00 – Kazakh women.

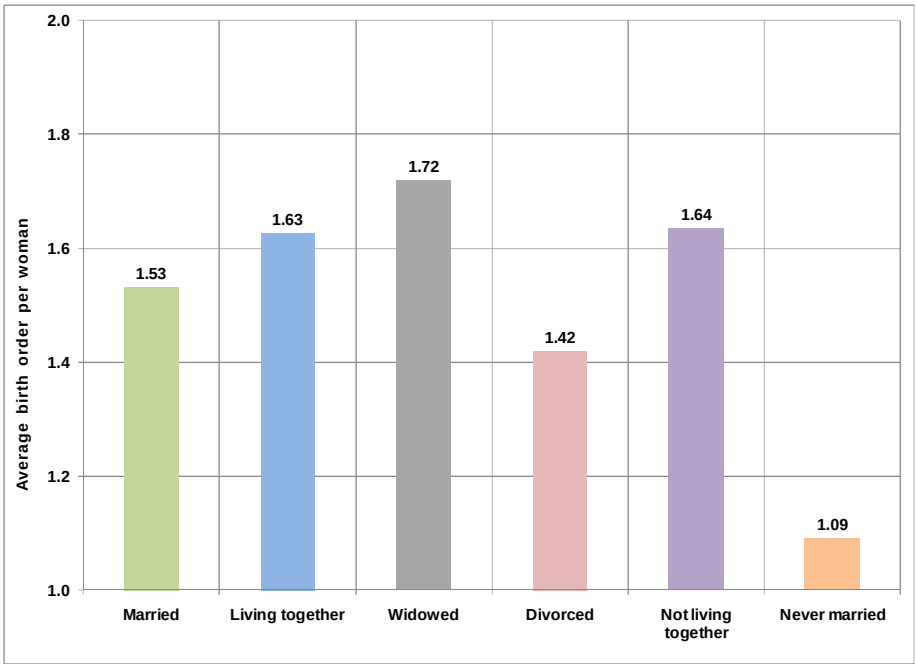
Figure 43 – Average birth order per woman by marital status according to ethnicity in Uzbekistan, 1996



Data: UZDHS-1996
Note: Never married women do not appeared in the answers of questionnaire. Childless women are excluded; birth cohorts in Uzbekistan - 1947-81.

Figure 44 illustrates the average birth order per woman by marital status in Ukraine, 2007. There widowed Ukrainian women show the highest birth order per woman, which is 1.72 and the lowest one is among never married women – 1.09. Those women who are in the status "not living together" show almost the same level with "living together" -1.64 and 1.63. Married Ukrainians are on the higher level (1.53) than divorced ones.

Figure 44 – Average birth order per woman by marital status in Ukraine, 2007

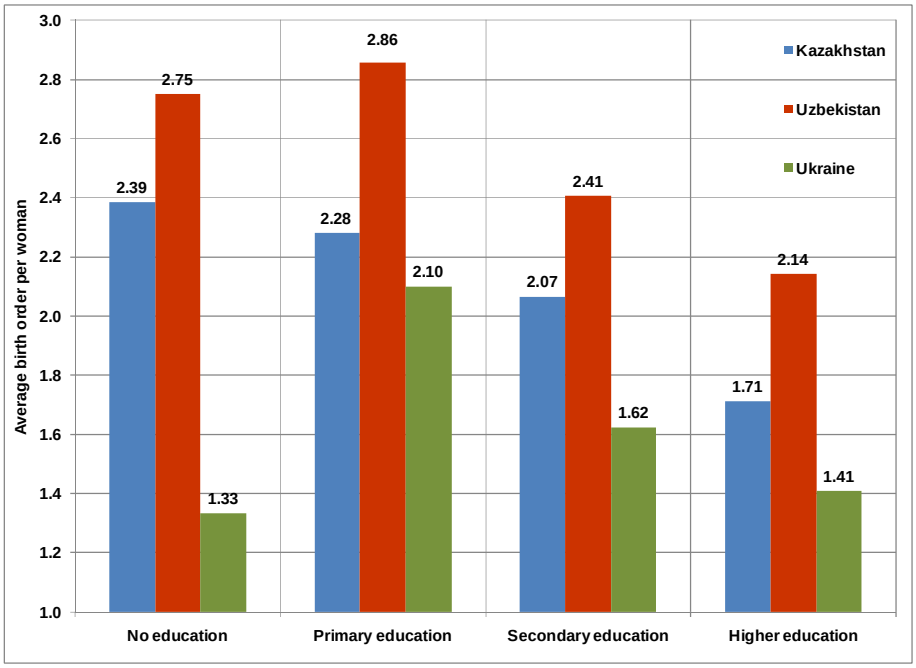


Data: UKDHS-2007
Note: Childless women are excluded; birth cohorts in Ukraine – 1958-92.

11.3 Birth order difference according to education

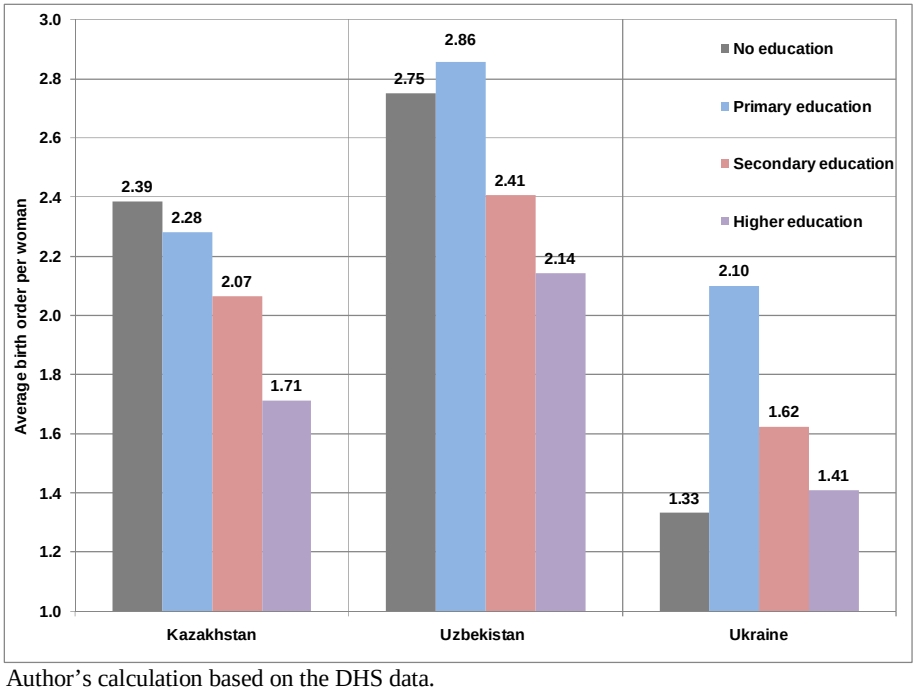
Education attainment is one of the visible factors that influence the decision to have children for each woman. In Kazakhstan average birth order per woman is decreasing from non-educated women to higher- educated ones (no education – 2.39, primary – 2.28, secondary – 2.07 and higher – 1.71), whereas in Uzbekistan and Ukraine women with primary education have the highest numbers of children per woman (2.86 and 2.10) among other levels of education, however, the lowest one in Ukraine is among no educated women (1.33) and in Uzbekistan it is among women with higher education (2.14) (see Figure 45a and 45b).

Figure 45a – Average birth order per woman by educational attainment in Kazakhstan – 1999, Uzbekistan – 1996 and Ukraine – 2007



Data: Author's calculation based on the DHS data.
Note: Childless women are excluded; birth cohorts in Kazakhstan – 1950-84, in Uzbekistan – 1947-81 and in Ukraine – 1958-92.

Figure 45b– Average birth order per woman by educational attainment in Kazakhstan – 1999, Uzbekistan – 1996 and Ukraine – 2007

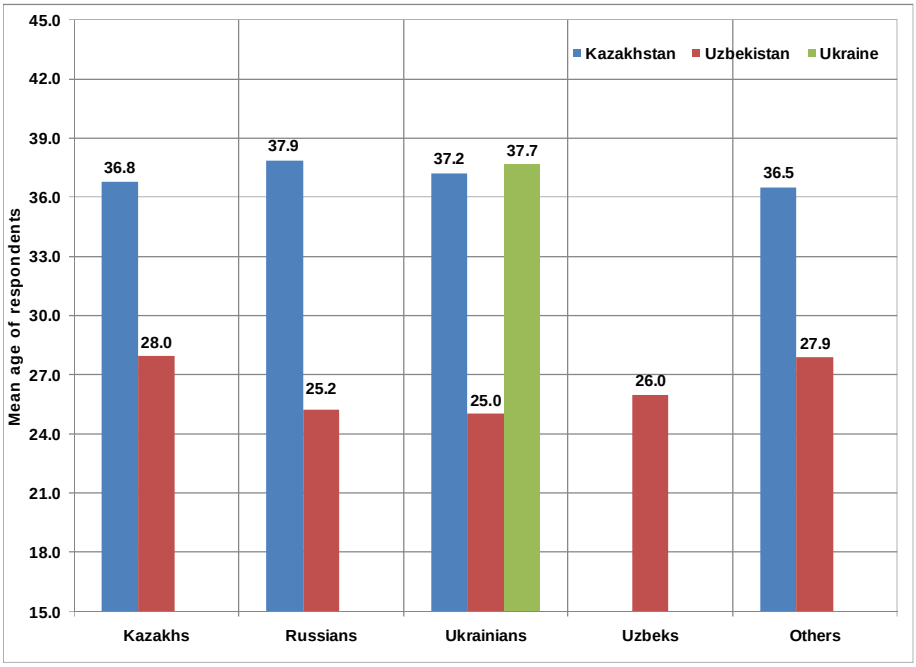


Data: Author's calculation based on the DHS data.
Note: Childless women are excluded; birth cohorts in Kazakhstan – 1950-84, in Uzbekistan – 1947-81 and in Ukraine – 1958-92.

11.4 Timing of childbearing

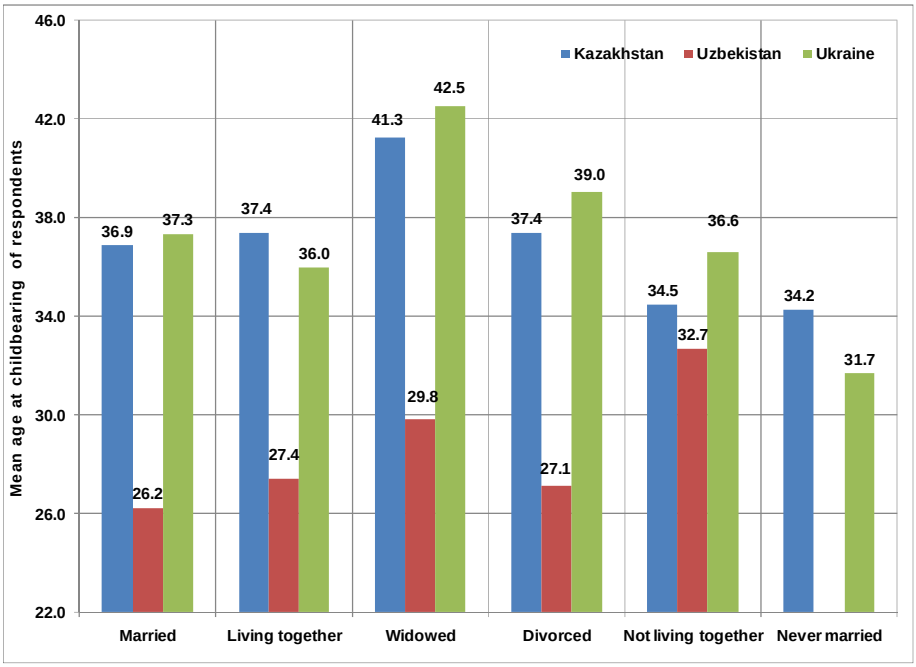
According to the DHS data, mean age of the Kazakh respondents with children in Kazakhstan is older than their co-ethnic respondents in Uzbekistan which is shown in Figure 46. From Figure 46 it can be seen that all respondents are much younger in Uzbekistan than in Kazakhstan and Ukraine. Thus, Kazakhs in Kazakhstan have children with 36.8 years, whereas Kazakhs in Uzbekistan have children at much younger ages – 28.0. Russians in Kazakhstan and in Uzbekistan also have big difference in Kazakhstan – 37.9, in Uzbekistan – 25.2. Ukrainian respondents in Kazakhstan (37.2) and Ukraine 37.7) are almost at the same age of childbearing, whereas in Uzbekistan they at 25.0 years old. The Uzbek respondents are on average at the age of 26.0 years old; and other ethnic groups in Uzbekistan (36.5) are also younger than others in Kazakhstan (27.9). Therefore, Uzbekistani respondents have mean age at childbearing before 30 years old, whereas Kazakhstani and Ukraine's – after, which can be associated with postponement of births.

Figure 46 – Mean age at childbearing of respondents with children according to ethnicity in Kazakhstan – 1999, Uzbekistan – 1996 and Ukraine – 2007



Data: Author's calculation based on the DHS data.

Figure 47 – Mean age at childbearing of respondents with children by marital status in Kazakhstan – 1999, Uzbekistan – 1996 and Ukraine – 2007



Data: Author's calculation based on the DHS data.

Figure 47 illustrates that the youngest mean ages at childbearing of mothers by marital status are in Uzbekistan, and almost the oldest in Ukraine. Thus, among married women is the youngest in Uzbekistan – 26.2, whereas the oldest women in Ukraine – 37.3. However, the married women of Kazakhstan do not differ a lot from Ukrainian women (36.9). The mothers who live together with their partners in Kazakhstan are of the highest age – 37.4, in Uzbekistan the youngest – 27.4, in Ukraine – 36.0. Among widowed mothers by countries also Uzbekistan is in the lowest position – 29.8, the highest is in Ukraine – 42.5. Mean age at childbearing of the divorced women of Uzbekistan are at the 27.1 years old, of Ukraine – 39.0 and in Kazakhstan – 37.4. The women, who do not live together with their partners, in Kazakhstan are on average of 34.5 years old, 32.7 years old in Uzbekistan and 36.6 years old in Ukraine. Never married women do not appear in Uzbekistan, but in Kazakhstan mean age at childbearing is older (34.2) than in Ukraine (31.7).

11.5 Variation in live and total birth orders

During the investigation of the DHS data were found the visible difference between average live birth order per woman and average of total births (including stillbirths and died children) per woman in each selected country. In Kazakhstan DHS data, average live birth order per woman was 1.78 in urban, 1.65 children in rural area and in average for whole country less on 1.25 children per woman. Such a significant difference in Kazakhstan can be seen in Table 7 and Figure 48. However, among the countries the highest difference in average live birth order and average of total live and died children or stillbirths (which were experienced by women

during their reproductive ages including those children who have died) represent Uzbekistan – in urban on 1.46, in rural area on 1.88 and in whole country on 1.66. The lowest difference represents Ukraine, there are in urban on 0.42, in rural settlement on 0.66 and in the country on 0.53 children per woman.

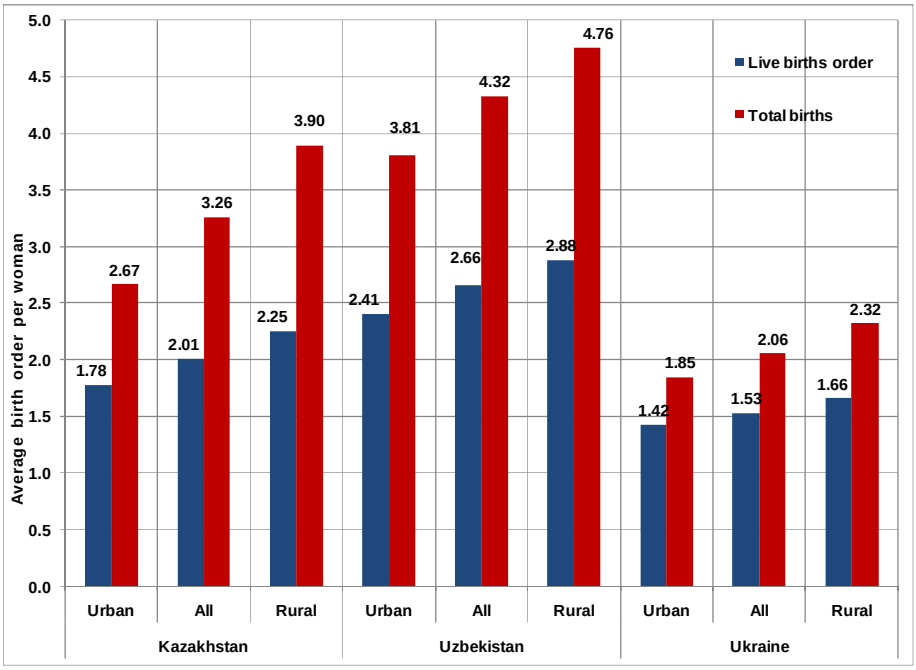
Infant and child mortality rates in every country have declined since medical implementation of child-and-mother health care. Thus, in Kazakhstan, Uzbekistan and Ukraine historical trends of infant and child mortality rates also are going down, it is clearly seen in Figure 49. However, from the comparison of trends between countries it is clearly seen that Uzbekistan is in the highest position such as in the DHS data analyzing which was mentioned above and shown in Figure 48 and Table 7. A similar situation has been observed in Kazakhstan: it is in the middle position by infant and child mortality rates and in the middle position by DHS survey in Figure 48 and Table 7. In other words, in Kazakhstan infant and child mortality rates are lower than in Uzbekistan and higher than in Ukraine, and, the difference in average live birth order per woman and average number of total births is less than in Uzbekistan and higher than in Ukraine. Regarding Ukraine, it takes the lowest trends of infant and child mortality rates and the least differences in average live birth order and total births.

Table 7 – Difference between average live birth order per woman and average number of total births per woman by type of settlements in the selected countries

Country / Types of settlements		**Average live births order per woman**	**Average of total births per woman**	**Difference**
Kazakhstan	**Urban**	1.78	2.67	0.89
	All	2.01	3.26	1.25
	Rural	2.25	3.90	1.65
Uzbekistan	**Urban**	2.41	3.81	1.41
	All	2.66	4.32	1.66
	Rural	2.88	4.76	1.88
Ukraine	**Urban**	1.42	1.85	0.42
	All	1.53	2.06	0.53
	Rural	1.66	2.32	0.66

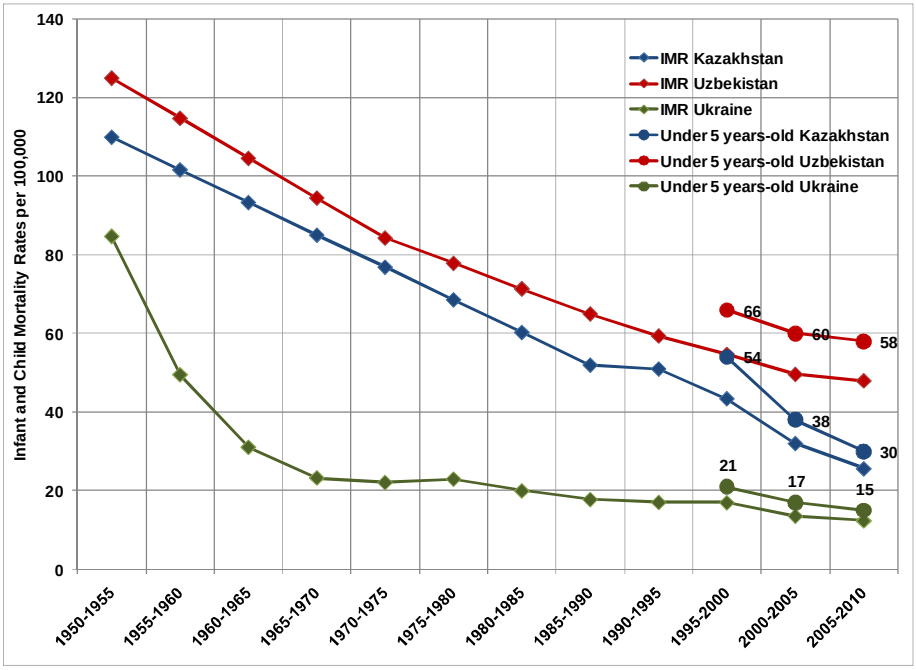
Data: Author's calculation based on the DHS data.

Figure 48 – Difference in the average live birth order and average of total births in Kazakhstan – 1999, Uzbekistan – 1996 and Ukraine – 2007



Data: Author's calculation based on the DHS data.

Figure 49 – Trends of Infant and Child Mortality Rates per 1 000 in Kazakhstan, Uzbekistan and Ukraine



Data: World Population Prospects: The 2008 Revision, http://esa.un.org/unpp.
Note: Under 5 years-old means 1-4 years-olds or child mortality.

It is important to mention when birth number is lower, differences between live birth order and total births will be also lower. However, the medical child care system is not much different among selected post-Soviet countries, because the medical system was kept in these countries. On the other hand, DHS survey in Ukraine was done in recent 2007 which can be also the reason in explaining less difference in average live birth order and total births per woman comparing with data of Kazakhstan DHS (1999) and Uzbekistan DHS (1996).

CHAPTER 12. FACTORS IMPACTING FERTILITY FROM MULTIDIMENSIONAL PERSPECTIVES

12.1 Multinomial logistic regression

Logistic regression describes the relationship between a categorical response variable and a set of predictor variables. The categorical response variable can be binary, ordinal or nominal. Generalized logits model (multinomial logistic regression) will be used in the analysis. "Live birth order" (each category apart: 1; 2; 3; 4+ with the reference category 2) is taken as a dependent variable. The classification "Ethnicity", "Place of residence", "Marital status", "Educational attainment", "Country", and "Age" stand for independent variables and the effect of each classification variable is expressed by reference parameterization scheme. Thus, for each following variables a reference category have been chosen: "Ethnicity" -"Russians", "Place of residence"– "Urban", "Marital status"– "Married", "Level of education" – "Higher", "Country" – "Kazakhstan", "Age group" – "20-24". Referenced categories are unchanged in each model.

Two main modeling approaches have been used:

Model I: logit of (live birth order)=b_0 + b1*ethnicity + b_2*marital status + b_3*place of residence + b_4*educational attainment + b_5*country + b_6*age group (Tables 8-12). The impact of each classification variable is estimated and controlled for age; countries are included in the model as explanatory variables.

Model II: logit of (live birth order)=b_0 + b1*ethnicity + b_2*marital status + b_3*place of residence + b_4*educational attainment + b_5*age group (Table 13-15). They are three models with the same classification variables controlled for age, made for each country apart.

In addition, two submodels were included as well:

Submodel 1: for each ethnicity apart: logit of (live birth order)=b_0 + b1 *marital status + b_2*place of residence + b_3*educational attainment + b_4*country + b_5*age group (Table 16-

20). The impact of each classification variable is estimated and controlled for age; countries are included in the model as explanatory variables.

Submodel 2: for each marital status apart and by country: logit of (live birth order)=b_0 + b1*ethnicity + b_2*place of residence + b_3*educational attainment + b_4* age group (Table 21-28). The impact of each classification variable is estimated and controlled for age.

Estimations, where p-value is more than 0.05, are not significant, if the differences between the odds ratios are small compared to the variability shown by their 95% Wald confidence intervals, it confirms the previous conclusion that some parameter is not significantly different from zero (if hypothesis Beta=0 is accepted, estimation values are not statistically significant).

12.2 Fertility preferences

The results of generalized logistic regression of live birth order related to Model I (countries included in the model) are presented step by step in Tables 8-12. The impact of ethnicity[1] is displayed in Table 8. The effect of Kazakh ethnicity versus Russian ethnicity is much higher to have fourth+, third live births and contrasts with second live born child, that is, Kazakhs have 5.8 times higher odds of having fourth+ child, 2.2 times higher odds of having third live born child and also they have 0.8 times lower risk of having first child than Russians when those birth orders are contrasted with a referenced second child. Ukrainian ethnicity have 1.9 times higher odds of having fourth live born child compared to Russian one, and other non-referenced categories as first and third child do not have statistically significant p-value (less or equal to 0.05), which means that Ukrainian and Russian ethnicities do not differ significantly in fertility behavior of having third and first live births. Uzbeks, compared with Russians, have 0.8 times less of having first live born children; however, they showed higher risks of having third (2.1 times) and fourth+ (4.0 times) live born children than Russians when contrasting with second live births. Other ethnic groups compared with Russians have 3.9 times higher risks of having fourth+ and 2.0 times higher risks of having third live births, however, do not differ in propensity to have first child. (see Table 8).

Surprisingly, after standardization, traditional Uzbek ethnicity have lower probability of having four or more live born children than mixed-traditional Kazakh ethnicity in comparison to non-traditional Russian communities. Therefore, structural factors (including higher child mortality) impact the most Uzbek society.

[1] In DHS data category of ethnicity country-specific: ethnic structure of Kazakhstan – Kazakh, Russian, Ukrainian and other (German, Korean, Tatar and other); Uzbekistan – Uzbek, Russian, Kazakh, Ukrainian and other (Tadjik, Korean, Iranian, Karakalpak, Turkmen, Tatar and other) ethnic groups; however, Ukraine DHS data are no any information about ethnicity, but in the dissertation it is taken as only Ukrainian ethnicity at all (see Chapter 10).

Table 8 – The results of generalized logistic regression according to ethnicity in all selected countries

Model I

Effect	Live birth order	Estimates	p-value	Odds Ratio	95% Wald Confidence Limits	
Kazakhs vs Russians	4	1.7641	<.0001	5.836	4.659	7.311
Kazakhs vs Russians	3	0.8016	<.0001	2.229	1.876	2.649
Kazakhs vs Russians	1	-0.2117	0.0003	0.809	0.722	0.907
Ukrainians vs Russians	4	0.6649	0.0064	1.944	1.205	3.136
Ukrainians vs Russians	3	0.1401	0.5002	1.150	0.766	1.729
Ukrainians vs Russians	1	-0.0900	0.5089	0.914	0.700	1.194
Uzbeks vs Russians	4	1.3800	<.0001	3.975	3.062	5.161
Uzbeks vs Russians	3	0.7881	<.0001	2.199	1.751	2.761
Uzbeks vs Russians	1	-0.2242	0.0074	0.799	0.678	0.942
Others vs Russians	4	1.3565	<.0001	3.883	2.990	5.042
Others vs Russians	3	0.6795	<.0001	1.973	1.585	2.455
Others vs Russians	1	-0.1372	0.0837	0.872	0.746	1.018

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Red colored numbers are statistically insignificant. Green colored numbers show negative effects.

In order to emphasize the point about marital fertility, Table 9 illustrates the results of fertility according to marital statuses. Therefore, fertility behavior of never married women does not differ from the behavior of married one due to insignificant p-values of having fourth+ and third live births, whereas the effect of having first child is obviously significant: never married women have 7.5 times higher risk of having first live born child compared to married ones. We can assume that a never married woman has the first child as never married and later she gets married or she remains single and has limited number of children, predominantly only one. The women, who are at the marital status "Living together", they have no difference with married women of having fourth+ child, whereas probability of having first child is 1.4 times higher and third – 1.2. Among all marital statuses only widowed women showed no difference from zero probabilities of having fourth+, third and first live births compared with married women: they have the same probabilities of having children. The effect "Divorced versus widowed" showed significant p-value of having live births at all contrasted with second live birth order. Thus, divorced women have 0.6 times lower risk of having fourth+, 0.8 times higher of having third and 1.5 times higher risk of having first child than married women contrasting with second live birth order. The women, who do not live together with their partners, have no significant difference with married ones of having third live birth order, however, they have 2.1 and 1.6 times higher probability of having fourth+ and first live births than married (see Table 9).

Single women have 7.5 times higher risk of giving first ordered live births. The women living together with their partners do not distinguish from the married women, which confirms the hypothesis that official registration is not important for them of giving third, fourth+ ordered live births

Table 9 - The results of generalized logistic regression according to marital statuses in all selected countries

Model I

Effect	Live birth order	Estimates	p-value	Odds Ratio	95% Wald Confidence Limits	
Never Married vs Married	4	-0.6656	0.5309	0.514	0.064	4.123
Never Married vs Married	3	0.0005	0.9994	1.001	0.273	3.668
Never Married vs Married	1	2.0146	<.0001	7.498	3.926	14.319
Living together vs Married	4	0.2897	0.1561	1.336	0.895	1.994
Living together vs Married	3	0.1852	0.2888	1.203	0.855	1.694
Living together vs Married	1	0.3241	0.0025	1.383	1.121	1.706
Widowed vs Married	4	-0.0356	0.7312	0.965	0.788	1.182
Widowed vs Married	3	0.0558	0.5845	1.057	0.866	1.291
Widowed vs Married	1	0.0631	0.4039	1.065	0.918	1.235
Divorced vs Married	4	-0.5571	<.0001	0.573	0.441	0.745
Divorced vs Married	3	-0.2061	0.0498	0.814	0.662	1.000
Divorced vs Married	1	0.3996	<.0001	1.491	1.328	1.674
Not living together vs Married	4	0.7477	0.0021	2.112	1.312	3.401
Not living together vs Married	3	0.0958	0.6865	1.101	0.691	1.753
Not living together vs Married	1	0.4770	0.0004	1.611	1.237	2.099

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Red colored numbers are statistically insignificant.
Dependent variable is "live birth order". Green colored numbers show negative effects.
Note: Never married women in Uzbekistan do not observed in the survey data (see Chapter 1 of Section II).

The result of Model I by place of residence of the mothers is shown in Table 10. It is clearly seen that women living in rural residence have 1.9 times higher risks of having fourth and more children and 1.3 times of having third children than in urban area in contrast with second live births. Slightly lower odds ratio of having first live born child comparing with second live birth: in rural area women have 0.8 times less the odds of having first live born child than the women living in urban area.

Table 10 - The results of generalized logistic regression according to place of residence in all selected countries

Model I

Effect	Live birth order	Estimates	P-value	Odds Ratio	95% Wald Confidence Limits	
Rural vs Urban	4	0.6623	<.0001	1.939	1.770	2.124
Rural vs Urban	3	0.2721	<.0001	1.313	1.204	1.431
Rural vs Urban	1	-0.2087	<.0001	0.812	0.762	0.864

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Red colored numbers are statistically insignificant. Green colored numbers show negative effects.
Dependent variable is "live birth order".

Uneducated women and women with primary education differ from women with higher educated in having fourth and more live births.

Educational attainment of women plays an important role in fertility, thus, Table 11 shows the results of multinomial logistic regression by educational attainment of the women in all selected countries. Uneducated women compared with those with higher education differ only of having fourth and more live born children than third and first live born child due to insignificant p-value; and odds ratio of having fourth+ live birth higher a lot among no educated women which is 3.6 times higher than educated ones, contrasting with second live birth order. Those women who graduated from only primary educational establishments have about 5.1 times higher probability of having fourth+ live born child than those who have graduated from higher school. The women, who graduated from secondary schools, have 2.5 times higher odds of having fourth+ live births, 1.4 times higher odds of having third and 0.8 times lower odds of having first live born child compared with the women with higher education (see Table 11).

Table 11 - The results of generalized logistic regression according to educational attainment of the women in all selected countries

Model I

Effect	Live birth order	Estimates	P-value	Odds Ratio	95% Wald Confidence Limits	
No education vs Higher	4	1.2767	0.0050	3.585	1.471	8.734
No education vs Higher	3	0.4903	0.3396	1.633	0.597	4.466
No education vs Higher	1	0.2165	0.6114	1.242	0.539	2.862
Primary vs Higher	4	1.6328	<.0001	5.118	2.430	10.780
Primary vs Higher	3	0.5993	0.1486	1.821	0.808	4.105
Primary vs Higher	1	-0.3082	0.3700	0.735	0.375	1.441
Secondary vs Higher	4	0.9059	<.0001	2.474	2.152	2.845
Secondary vs Higher	3	0.3282	<.0001	1.388	1.239	1.555
Secondary vs Higher	1	-0.1780	<.0001	0.837	0.779	0.900

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Red colored numbers are statistically insignificant. Green colored numbers show negative effects.
Dependent variable is "live birth order".

Having analyzed the above mentioned aspects, it would be logical to compare odds of having children by country. Comparisons between countries are the most representative and

they can give most detailed information about country-specific fertility. Therefore, in Table 12 it can be seen that Uzbekistan do not distinguish from Kazakhstan of having first ordered live births, that means they do not differ in fertility behavior of women to have first live born children, because there is p-value are much higher than pre-determined 5 percent. However, it is clearly different of having fourth+ and third live born children in Uzbekistan than in Kazakhstan, thus, women living in Uzbekistan have 2.6 times higher risks of having fourth+ children and 1.2 times higher of having third ordered live births than those who live in Kazakhstan, contrasting with second live births. In Ukraine women obviously have lower probabilities of having fourth+ and third child, which are 0.4 and 0.6 times, compared with Kazakhstan, however, women in Ukraine and in Kazakhstan do not differ in fertility from each other of having first ordered live births.

Table 12 - The results of generalized logistic regression by country

Model I

Effect	Live birth order	Estimates	P-value	Odds Ratio	95% Wald Confidence Limits	
Uzbekistan vs Kazakhstan	4	0.9760	<.0001	2.654	2.235	3.151
Uzbekistan vs Kazakhstan	3	0.2063	0.0217	1.229	1.031	1.466
Uzbekistan vs Kazakhstan	1	-0.0958	0.1740	0.909	0.792	1.043
Ukraine vs Kazakhstan	4	-0.8820	0.0002	0.414	0.262	0.653
Ukraine vs Kazakhstan	3	-0.4194	0.0365	0.657	0.444	0.974
Ukraine vs Kazakhstan	1	0.2400	0.0680	1.271	0.982	1.645

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Red colored numbers are statistically insignificant. Green colored numbers shows negative effects.
Dependent variable is "live birth order".

12.3 Country differentials in fertility factors

Kazakhstan. *Ethnicity.* Table 13 shows that in Kazakhstan Kazakhs have 5.1 times higher odds of having fourth+ child and at about 2.0 times higher odds of having third live born child than Russians, but Kazakhs have 0.8 lower probability of having first live birth than Russians. In turn, Ukrainian women have 1.9 times higher risks to give fourth live births than Russian ones, however, in other categorical effects they show no difference compared with Russian ethnicity due to insignificant p-values. Other ethnic groups in Kazakhstan have 2.9 times higher risks of having fourth live births and 1.8 times higher of having third live births compared to Russian ethnicity, but of having first live births parameter "others versus Russians" is not significantly different from zero.

Marital status. The result of analyzing of likelihood estimations and odds ratio of fertility by marital status in Kazakhstan showed insignificant or no difference in the following parameters: "Never married versus Married" of having fourth+ and third live births, "Living together versus Married" and "Widowed versus Married" of having live births at all,

"Divorced versus Married" of having fourth+ and first live births, "Not living together versus Married" of having fourth+ and third live births. Therefore, never married women have 5.2 times higher odds ratio of having first live births compared with married women, divorced have 0.4 times lower risk of having fourth+ 1.5 times higher of having first live births; those, who do not live together have 1.7 times higher of having first live births than married ones.

Women in rural area in Kazakhstan and Ukraine have lower probability of having first live birth, whereas in Uzbekistan no difference has been observed among rural and urban areas regarding the first live birth order.

Place of residence. Place of residence plays an important role of having children, thus, in Kazakhstan women in rural area have 2.3 times higher odds of having fourth+ children and 1.5 times higher odds of having third live births compared to urban one. Furthermore, women in rural area show 0.8 times lower odds of having first live births compared to women who live in urban settlements, which can be explained that in urban area women do not have second live births than in rural one anymore.

Educational attainment. Odds ratios related to "No education versus Higher" and "Primary versus Higher" of having fourth+ live births are notable. Uneducated women have 6.1 times and primary educated women have 4.2 times higher odds of having fourth live births compared with higher educated women in Kazakhstan and contrasting with second live birth order. The women, who have graduated from secondary education, have 3.0 times higher odds of having fourth and over live births and 1.3 times higher odds of having third live births compared with higher educated women. However, they have 0.8 times lower probability of delivering first live births (see Table 13).

Table 13 - The results of generalized logistic regression by ethnicity, marital status, place of residence, educational attainment of the women in Kazakhstan

Model II

Effect	Live birth order	Estimates	P-value	Odds ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	1.6296	<.0001	5.102	3.970	6.556
Kazakhs vs Russians	3	0.7427	<.0001	2.102	1.741	2.538
Kazakhs vs Russians	1	-0.2017	0.0018	0.817	0.720	0.928
Ukrainians vs Russians	4	0.6509	0.0104	1.917	1.165	3.154
Ukrainians vs Russians	3	0.1027	0.6339	1.108	0.726	1.691
Ukrainians vs Russians	1	-0.0927	0.5120	0.911	0.691	1.203
Other(in KAZ) vs Russians	4	1.0685	<.0001	2.911	2.074	4.085
Other(in KAZ) vs Russians	3	0.6029	<.0001	1.827	1.399	2.387
Other(in KAZ) vs Russians	1	-0.1230	0.2103	0.884	0.729	1.072
Marital status						
Never Married vs Married	4	-10.7800	0.9409	<0.001	<0.001	>999.999
Never Married vs Married	3	-0.3409	0.6780	0.711	0.142	3.556
Never Married vs Married	1	1.6553	0.0002	5.235	2.215	12.369
Living together vs Married	4	0.2905	0.4458	1.337	0.634	2.821
Living together vs Married	3	0.2988	0.3398	1.348	0.730	2.490
Living together vs Married	1	0.2423	0.2807	1.274	0.820	1.979
Widowed vs Married	4	-0.0812	0.6368	0.922	0.658	1.291
Widowed vs Married	3	0.0190	0.9083	1.019	0.738	1.408
Widowed vs Married	1	0.1060	0.4135	1.112	0.862	1.433
Divorced vs Married	4	-0.8496	0.0004	0.428	0.268	0.681
Divorced vs Married	3	-0.1824	0.2553	0.833	0.609	1.141
Divorced vs Married	1	0.4031	<.0001	1.496	1.226	1.827
Not living together vs Married	4	0.0546	0.9060	1.056	0.427	2.615
Not living together vs Married	3	0.1354	0.6974	1.145	0.579	2.266
Not living together vs Married	1	0.5596	0.0108	1.750	1.138	2.690
Place of residence						
Rural vs Urban	4	0.8517	<.0001	2.344	1.987	2.764
Rural vs Urban	3	0.3837	<.0001	1.468	1.267	1.700
Rural vs Urban	1	-0.1688	0.0036	0.845	0.754	0.946

Continuation of Table 13

Effect	Live birth order	Estimates	P-value	Odds ratio	95% Wald Confidence Limits	
Educational attainment						
No education vs Higher	4	1.8082	0.0017	6.099	1.972	18.863
No education vs Higher	3	0.5995	0.3348	1.821	0.539	6.158
No education vs Higher	1	0.1806	0.7297	1.198	0.430	3.336
Primary vs Higher	4	1.4373	0.0217	4.209	1.234	14.361
Primary vs Higher	3	0.3824	0.5634	1.466	0.401	5.365
Primary vs Higher	1	0.0394	0.9420	1.040	0.360	3.004
Secondary vs Higher	4	1.1072	<.0001	3.026	2.304	3.974
Secondary vs Higher	3	0.3040	0.0026	1.355	1.112	1.652
Secondary vs Higher	1	-0.1962	0.0050	0.822	0.717	0.942

Data: KDHS-1999. Author's calculation by SAS.
Note: Red colored numbers are statistically insignificant. Green colored numbers shows negative effects. Dependent variable is "live birth order".

Uzbekistan. *Ethnicity.* Table 14 shows that in Uzbekistan Kazakhs have 7.9 times higher odds of having fourth+ and 3.1 times higher odds of having third live births, and 0.7 times lower odds of having first live births compared with Russian ethnicity in contrast of having second live birth. The parameter "Ukrainians versus Russians" show zero difference at all. Uzbeks have 5.8 times higher odds ratio of delivering fourth+ and 3.0 times higher of delivering third live births, however, they show 0.7 times less odds of having first live births than Russians. Other ethnic groups in Uzbekistan show 5.9 times higher of having fourth+ and 2.7 times higher of having third live births compared to Russians and no significant p-value of having first live births.

Kazakhs in Kazakhstan have lower odds of having four and more children than they have in Uzbekistan. Higher odds of Kazakhs in Uzbekistan are even higher than among traditional Uzbeks in Uzbekistan in comparison with Russian ethnicity.

Marital status. In Uzbekistan the effect of parameters as "Widowed versus Married" and "Not living together versus Married" are not significant of having 1, 3, 4+ live births contrasting with second live birth. Between the women who live together with their partners and married one is no difference of having fourth+ live births, however, there are significant p-values of having fewer children: living together with their partners, women have 0.4 times lower probability of having third and 1.7 times higher of having first live birth ordered children compared to women who are in marriage. Parameter "Divorced versus Married" shows that divorced have 1.7 times higher probability of having first live birth ordered children than married one. Thus,

In Ukraine never married women have 10.0 times higher probability of having first live births, whereas in Kazakhstan they have 5.2 times higher odds compared to married women.

the fertility behaviors of women in each marital status are almost the same and only living together and divorced women have differences compared to women who are married.

Place of residence. According to results of the regression it is clearly seen that in Uzbekistan place of residence plays an important role as in Kazakhstan. Thus, in rural area women experience 1.8 times higher probability of having fourth+ and 1.2 times higher odds of having third live births than in urban one; however, the odds of having first live births is equal to zero difference between places of residences.

Educational attainment. To compare parameters "No education versus Higher" are not possible at all due to p-values which are higher than 0.05. At the same time parameters "Primary versus Higher" and "Secondary versus Higher", of having third and first live births are also impossible to contrast due to the lack of any difference; there is significant p-value only between the odds ratios of having a fourth live born child: women with primary education have 4.1 times higher and women, who graduated from secondary education, have 1.5 times higher than the higher educated women. All effects are contrasted with second live births (see Table 14).

Table 14 – The results of generalized logistic regression by ethnicity, marital status, place of residence, educational attainment of the women in Uzbekistan

Model II

Effect	Live birth order	Estimates	p-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	2.0677	<.0001	7.907	4.487	13.932
Kazakhs vs Russians	3	1.1526	<.0001	3.166	1.895	5.291
Kazakhs vs Russians	1	-0.3613	0.0334	0.697	0.499	0.972
Ukrainians vs Russians	4	-0.3709	0.7395	0.690	0.077	6.145
Ukrainians vs Russians	3	0.2533	0.7658	1.288	0.243	6.818
Ukrainians vs Russians	1	0.0197	0.9711	1.020	0.350	2.970
Uzbeks vs Russians	4	1.7582	<.0001	5.802	3.429	9.816
Uzbeks vs Russians	3	1.1066	<.0001	3.024	1.914	4.779
Uzbeks vs Russians	1	-0.3150	0.0176	0.730	0.563	0.947
Other(in UZB) vs Russians	4	1.7744	<.0001	5.897	3.421	10.164
Other(in UZB) vs Russians	3	1.0002	<.0001	2.719	1.674	4.415
Other(in UZB) vs Russians	1	-0.2570	0.0851	0.773	0.577	1.036
Marital status						
Living together vs Married	4	-0.6992	0.1000	0.497	0.216	1.143
Living together vs Married	3	-1.0058	0.0433	0.366	0.138	0.970
Living together vs Married	1	0.5359	0.0353	1.709	1.038	2.815
Widowed vs Married	4	-0.1305	0.4195	0.878	0.639	1.205
Widowed vs Married	3	-0.0998	0.5863	0.905	0.632	1.296
Widowed vs Married	1	0.0856	0.5968	1.089	0.793	1.496
Divorced vs Married	4	-0.3989	0.0721	0.671	0.435	1.036
Divorced vs Married	3	-0.4173	0.0965	0.659	0.403	1.078
Divorced vs Married	1	0.5570	0.0012	1.745	1.246	2.444
Not living together vs Married	4	1.0645	0.0835	2.900	0.868	9.682
Not living together vs Married	3	0.5399	0.4151	1.716	0.468	6.287
Not living together vs Married	1	0.4073	0.4230	1.503	0.555	4.070
Place of residence						
Rural vs Urban	4	0.6026	<.0001	1.827	1.613	2.069
Rural vs Urban	3	0.1725	0.0093	1.188	1.043	1.353
Rural vs Urban	1	-0.0509	0.3770	0.950	0.849	1.064

Continuation of Table 14

Effect	Live birth order	Estimates	p-value	Odds Ratio	95% Wald Confidence Limits	
Educational attainment						
No education vs Higher	4	0.5386	0.5239	1.714	0.327	8.977
No education vs Higher	3	0.1733	0.8634	1.189	0.165	8.561
No education vs Higher	1	0.3596	0.6955	1.433	0.237	8.674
Primary vs Higher	4	1.4029	0.0248	4.067	1.194	13.85
Primary vs Higher	3	-0.9657	0.3908	0.381	0.042	3.456
Primary vs Higher	1	0.0879	0.8968	1.092	0.289	4.120
Secondary vs Higher	4	0.5782	<.0001	1.783	1.468	2.165
Secondary vs Higher	3	0.1140	0.2396	1.121	0.927	1.355
Secondary vs Higher	1	-0.0617	0.4438	0.940	0.803	1.101

Data: UZDHS-1999 Author's calculations by SAS.
Note: Red colored numbers are statistically insignificant. Green colored numbers show negative effects.
Dependent variable is "live birth order".

Ukraine. *Marital status.* (see Table 15) The result of analyzing of likelihood estimations and odds ratio of fertility by marital status in Ukraine showed insignificance or no difference in the following parameters: "Never married versus Married" of having fourth+ and third live births, "Living together versus Married" of having third live birth ordered children, "Widowed versus Married" of having live births at all, "Divorced versus Married" of having fourths and third live births and "Not living together versus Married" of having third live births. Therefore, never married women have 10.0 times higher probability of having first live births compared with married women. The women, who have been living together with their partners, have 2.5 times higher odds ratio of having fourth and over and 1.4 times higher of having first live born children than women who are married.

Those, who are divorced, show 1.4 times higher risk of having first live births than those who are married. The women, at the marital status "Not living together" have 3.7 times higher risk of having fourth+ and 1.5 times higher risk of having first live births compared to married ones and contrasted with second live birth.

Place of residence. Ukraine represents that in urban area they have more probability to increase fertility than in rural one. Thus, rural area shows significant difference: 1.7 times higher probability of having fourth and 1.5 times higher odds of having third live births compared in urban area. To compare rural with urban of having first live born children it is obviously seen lower probability (on 0.7 times) in rural than in urban settlements.

Educational attainment. To compare parameters "No education versus Higher" are not possible due to p-values are higher than predominated 5 per cent, also parameter "Primary versus Higher" of having first live births is also impossible due to zero difference. However, women with primary education have 14.9 times higher odds of having fourth+ and 6.8 times higher probabilities of having third children compared with higher educated women. Secondary educated women have 5.3 times higher of giving fourth and over and 1.7 times higher of giving third and 0.8 times lower probability of having only first live born children

compared to higher educated women and contrasting with second live birth ordered children in Ukraine (see Table 15).

Table 15 – The results of generalized logistic regression by marital status, place of residence, educational attainment of the women in Ukraine

Model II

Effect	Live birth order	Estimates	P-value	Odds ratio	95% Wald Confidence Limits	
Marital status						
Never Married vs Married	4	1.5106	0.1808	4.529	0.496	41.373
Never Married vs Married	3	0.3973	0.7230	1.488	0.165	13.393
Never Married vs Married	1	2.3040	<.0001	10.014	3.653	27.448
Living together vs Married	4	0.9303	0.0012	2.535	1.442	4.457
Living together vs Married	3	0.4610	0.0513	1.586	0.997	2.521
Living together vs Married	1	0.3147	0.0248	1.370	1.041	1.803
Widowed vs Married	4	0.4036	0.1229	1.497	0.897	2.500
Widowed vs Married	3	0.2955	0.1173	1.344	0.928	1.945
Widowed vs Married	1	0.0286	0.8016	1.029	0.823	1.286
Divorced vs Married	4	-0.1320	0.6412	0.876	0.503	1.527
Divorced vs Married	3	-0.0133	0.9380	0.987	0.705	1.381
Divorced vs Married	1	0.3682	<.0001	1.445	1.234	1.692
Not living together vs Married	4	1.3116	0.0001	3.712	1.914	7.200
Not living together vs Married	3	-0.0681	0.8619	0.934	0.434	2.012
Not living together vs Married	1	0.4283	0.0196	1.535	1.071	2.199
Place of residence						
Rural vs Urban	4	0.5459	0.0009	1.726	1.250	2.384
Rural vs Urban	3	0.4349	<.0001	1.545	1.257	1.899
Rural vs Urban	1	-0.3490	<.0001	0.705	0.636	0.782
Educational attainment						
No education vs Higher	4	-11.7850	0.9962	<0.001	<0.001	>999.999
No education vs Higher	3	-12.7288	0.9936	<0.001	<0.001	>999.999
No education vs Higher	1	0.0174	0.9887	1.018	0.091	11.388
Primary vs Higher	4	2.7040	0.0016	14.940	2.787	80.085
Primary vs Higher	3	1.9138	0.0021	6.779	2.007	22.899
Primary vs Higher	1	-0.7998	0.1674	0.449	0.144	1.399
Secondary vs Higher	4	1.6747	<.0001	5.337	3.559	8.004
Secondary vs Higher	3	0.5586	<.0001	1.748	1.419	2.153
Secondary vs Higher	1	-0.1804	0.0006	0.835	0.753	0.926

Data: UKDHS-2007. Author's calculations by SAS.
Note: Red colored numbers are statistically insignificant. Green colored numbers show negative effects.
Dependent variable is "live birth order".

12.4 Ethnic differences in fertility

In order to derive more detailed information about fertility by ethnicity, separately for each ethnicity apart multinomial logistic regression were made. In the study it was called as Submodel 1. In statistical significance testing of parameters (marital status, place of residence and educational attainment) by ethnicity only Ukrainian one showed most significant p-values than Kazakh, Russian and Uzbeks. (Completed tables with insignificances were put in annexes).

Kazakhs. *Marital status.* (Table 16) Almost all parameters are not different, only never married Kazakh women have 5.0 times higher odds and divorced have 1.6 times higher odds of having first live birth ordered children, and divorced women have 0.4 times lower odds of having fourth+ live birth ordered children compared to married ones and contrasting with second live birth order.

Place of residence. Parameter "Rural versus Urban" of having first live births is not different, but the parameters of having fourth+ and third show that women in rural area have 1.8 times higher of having fourth+ and 1.3 times higher of having third live births than women in urban area. That is, Kazakhs have higher probability of having children in rural area than in rural.

Educational attainment. Among parameters of educational attainment only "Secondary versus higher" for fourth+ and third live birth orders are significant. Thus, Kazakh women, who graduated from the secondary education, have 2.6 times higher probability of having fourth and over live births and 1.3 times higher of having third live births compared to those women, who have higher education.

Country. Table 16 shows that Kazakhs in Uzbekistan have higher fertility than Kazakhs in Kazakhstan, thus, Uzbekistani Kazakh women have 2.6 times higher odds of having fourth+ and 1.3 times higher of having third live births compared to Kazakhstani Kazakhs and contrasting with second live birth order. Probability of having first live birth order is the same due to insignificance. To compare Ukraine is not possible due to there are no observed Kazakhs.

Table 16 – The results of multinomial logistic regression, Kazakhs

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Never Married vs Married	1	1.6165	0.0098	5.036	1.477	17.166
Divorced vs Married	4	-0.8875	0.0009	0.412	0.244	0.694
Divorced vs Married	1	0.4926	0.0021	1.637	1.195	2.241
Place of residence						
Rural vs Urban	4	0.6119	<.0001	1.844	1.546	2.199
Rural vs Urban	3	0.2680	0.0021	1.307	1.102	1.551
Educational attainment						
Secondary vs Higher	4	0.9568	<.0001	2.603	2.000	3.388
Secondary vs Higher	3	0.2864	0.0119	1.332	1.065	1.664
Country						
Uzbekistan vs Kazakhstan	4	0.9552	<.0001	2.599	2.023	3.339
Uzbekistan vs Kazakhstan	3	0.2833	0.0381	1.327	1.016	1.735

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Green colored numbers show negative effects.

Russians. *Marital status.* (Table 17). Fertility preferences of Russian women by marital status almost do not have differences compared to married ones; however, never married have 8.2 times higher odds, living together have 1.6 times higher, and divorced have 1.4 times higher odds of having first live birth children than married contrasting with second ordered live births. Those women who do not live together with their partners differs from married one of having fourth+ live births, they have 3.3 times higher probability.

Place of residence. In rural area Russian women have 4.5 times higher of having fourth+ and 1.7 times higher probability of having third live birth ordered children than in urban settlement. In rural area women with one child occurs fewer than in urban: 0.7 times less odds of having first live births.

Educational attainment. Education plays an important role in fertility in general, however, Russian women shows almost no differences in levels of education, only secondary educated women have 2.7 times higher odds of having fourth+ ordered live born children than higher educated ones.

Country. Uzbekistani Russians have 2.5 times higher odds of having fourth+ live births compared to Kazakhstani Russians. However, between those Russians who live in Uzbekistan and in Kazakhstan are no difference of having third and first ordered live births.

Table 17 – The results of multinomial logistic regression, Russians

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Never Married vs Married	1	2.1111	0.0431	8.258	1.068	63.857
Living together vs Married	1	0.4834	0.0449	1.622	1.011	2.601
Divorced vs Married	1	0.3619	0.0125	1.436	1.081	1.908
Not living together vs Married	4	1.2024	0.0056	3.328	1.422	7.787
Place of residence						
Rural vs Urban	4	1.5176	<.0001	4.561	2.893	7.192
Rural vs Urban	3	0.5796	0.0006	1.785	1.280	2.490
Rural vs Urban	1	-0.2445	0.0354	0.783	0.624	0.983
Educational attainment						
Secondary vs Higher	4	0.9912	0.0171	2.695	1.193	6.086
Country						
Uzbekistan vs Kazakhstan	4	0.9340	0.0023	2.545	1.395	4.642

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Green colored numbers show negative effects.

Ukrainians. *Marital status.* (Table 18). Between never married Ukrainian women and married ones are no differences of having fourth+ and third ordered live births due to insignificances, but never married have much higher probability (10.5 times) of having first ordered live births than married one. Ukrainians, who live together with their partners have higher odds of having first (1.3 times), third (1.6 times), fourth+ (2.4 times) ordered live births than married ones. Behaviors of widowed and married women are the same, and divorced compared to married shows similarity of having third and fourth+ ordered live born children, but divorced have higher odds (1.4 times) of having first live births and contrasting with second ordered live births. Those women, who live separate from their partners (not living together) have 3.5 times higher of having fourth+ and 1.5 times higher odds of having first live births.

Place of residence. In rural area people have higher probability to have third, fourth and more children, even European Ukrainians: in Table 18 seen that in rural settlements Ukrainian women have 1.8 and 1.6 times higher probability of having more children than in urban one, and less probability of having only one child.

Educational attainment. No educated Ukrainian women have similar fertility behavior with higher educated ones, but those women who have primary education have 15.8 times higher of having fourth+ and 6.7 times higher probability of having third ordered live born children than those who have higher education, however, between primary educated and higher educated women is no difference to have first live birth order. Obvious difference between those who have secondary and higher education: secondary educated women have 5.5 times higher of delivering fourth+, 1.7 times of delivering third and 0.8 times less odds of

having first ordered live born children than higher educated one contrasting with second live births.

Country. Between Ukrainians in Uzbekistan and Ukrainians in Kazakhstan at all and between Ukrainians in Ukrainian and Ukrainians in Kazakhstan of having first live births are no differences in fertility behavior, however, Ukrainians in Ukraine have 0.4 times less of having fourth+ and 0.6 times less odds of having third ordered live born children than in Ukrainians in Kazakhstan.

Table 18 – The results of multinomial logistic regression, Ukrainians

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Never Married vs Married	1	2.3551	<.0001	10.540	3.851	28.847
Living together vs Married	4	0.8752	0.0015	2.399	1.397	4.121
Living together vs Married	3	0.4772	0.0349	1.612	1.034	2.511
Living together vs Married	1	0.3043	0.0267	1.356	1.036	1.774
Divorced vs Married	1	0.3619	<.0001	1.436	1.229	1.677
Not living together vs Married	4	1.2606	0.0002	3.528	1.824	6.824
Not living together vs Married	1	0.4253	0.0191	1.530	1.072	2.184
Place of residence						
Rural vs Urban	4	0.6076	<.0001	1.836	1.352	2.493
Rural vs Urban	3	0.4630	<.0001	1.589	1.301	1.941
Rural vs Urban	1	-0.3445	<.0001	0.709	0.640	0.784
Educational attainment						
Primary vs Higher	4	2.7622	0.0013	15.834	2.956	84.810
Primary vs Higher	3	1.9103	0.0021	6.755	2.000	22.817
Secondary vs Higher	4	1.7122	<.0001	5.541	3.707	8.283
Secondary vs Higher	3	0.5523	<.0001	1.737	1.415	2.133
Secondary vs Higher	1	-0.1788	0.0006	0.836	0.755	0.926
Country						
Ukraine vs Kazakhstan	4	-0.8778	0.0003	0.416	0.260	0.665
Ukraine vs Kazakhstan	3	-0.4160	0.0462	0.660	0.438	0.993

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Green colored numbers show negative effects.

Uzbeks. *Marital status.* (see Table 19). Fertility behaviors of Uzbeks are almost the same compared each marital status with married one. They have differences if they are divorced and have fourth+, first live birth order: 0.3 times higher probability than married, and first live birth order: 1.8 times higher odds than married one.

Place of residence. Uzbek ethnicity in rural area has fourth+ ordered live births 1.8 times higher than in urban area. Third and first ordered live births in both settlements are the same due to insignificant p-values.

Educational attainment. Fertility behavior by education almost do not distinguished among Uzbek women, however, primary educated have 4.5 times higher and secondary educated have 1.9 times higher probability of having fourth+ ordered live births compared to those women, who graduated from higher schools.

Uzbek ethnicity is not observed in Kazakhstan and Ukraine in the data that is why variable "Country" is missing.

Table 19 – The results of multinomial logistic regression, Uzbeks

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Divorced vs Married	4	-1.1024	0.0036	0.332	0.158	0.698
Divorced vs Married	1	0.6033	0.0101	1.828	1.155	2.894
Place of residence						
Rural vs Urban	4	0.5949	<.0001	1.813	1.576	2.086
Educational attainment						
Primary vs Higher	4	1.5007	0.0172	4.485	1.305	15.412
Secondary vs Higher	4	0.6709	<.0001	1.956	1.541	2.482

Data: KDHS-1999, UZDHS-1999 and UKDHS-2007 Author's calculations by SAS.
Note: Green colored numbers show negative effects.

12.5 Country variations according to marital status

In order to derive more detailed information about fertility by marital status, separately for each marital status by countries multinomial logistic regression were made. In the study it was called as Submodel 2. In statistical significance testing of parameters (ethnicity, place of residence and educational attainment) by marital status only married one showed most significant p-values than "Living together", "Widowed", "Divorced" statuses, whereas "Not living together" and "Never married" showed no significances at all. (Completed tables with insignificances were put in Annex II).

MARRIED

Kazakhstan. (Table 20) *Ethnicity.* Married Kazakh women in Kazakhstan have 5.7 times higher of giving fourth+, 2.2 times higher of giving third and 0.8 times lower odds ratio of giving first ordered live births than married Russian women. Married Ukrainians have 1.8 times higher probability of having fourth+ live births than married Russians contrasting with second live birth order. Other ethnic groups also who in marriage have higher probability of having fourth+ (3.1 times) and third (1.8 times) live birth orders.

Place of residence. In Kazakhstan married women give live births more in urban area, it seen in Table 15, in rural area they have 2.2 times higher of giving fourth+, 1.4 times higher

odds of giving third and giving only first ordered live born children is 0.8 times less than in urban settlements.

Educational attainment. No educated married women in Kazakhstan have 6.7 times higher probability of giving fourth+ ordered live births than higher educated women. Married women, who graduated from secondary education, have 2.9 times higher of giving fourth+, 1.3 times higher of giving third and 1.3 times less odds of giving only first ordered live births compared to higher educated ones and contrasting second live birth order.

Table 20 – The results of multinomial logistic regression, Married, Kazakhstan

Submodel 2

Effect	Live birth order	Esti-mations	P-value	Odds ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	1.7487	<.0001	5.747	4.335	7.618
Kazakhs vs Russians	3	0.7856	<.0001	2.194	1.781	2.701
Kazakhs vs Russians	1	-0.2281	0.0012	0.796	0.693	0.914
Ukrainians vs Russians	4	0.6152	0.0386	1.850	1.033	3.314
Other(in KAZ) vs Russians	4	1.1254	<.0001	3.081	2.113	4.494
Other(in KAZ) vs Russians	3	0.6115	<.0001	1.843	1.369	2.481
Place of residence						
Rural vs Urban	4	0.7971	<.0001	2.219	1.865	2.640
Rural vs Urban	3	0.3688	<.0001	1.446	1.236	1.692
Rural vs Urban	1	-0.1497	0.0165	0.861	0.762	0.973
Educational attainment						
No education vs Higher	4	1.9030	0.0017	6.706	2.040	22.045
Secondary vs Higher	4	1.0812	<.0001	2.948	2.226	3.906
Secondary vs Higher	3	0.2724	0.0108	1.313	1.065	1.619
Secondary vs Higher	1	-0.1523	0.0447	0.859	0.740	0.996

Data: KDHS-1999. Author's calculations by SAS.
Note: Green colored numbers show negative effects.

Uzbekistan. (see Table 21) *Ethnicity.* Kazakh married women in Uzbekistan have 7.8 times higher odds ratio of having a fourth+ live birth and 3.0 times higher odds of having a third live birth than married Russian women in the country. As well as married Kazakhs, married Uzbek women have higher probability of having a fourth+ live birth (6.4 times) and a third (2.9 times), other ethnic groups also have a higher probability of having a fourth+ live birth (6.5 times) and third (2.7 times) ordered live births compared to married Russian women and contrasting with second ordered live births.

Place of residence. Married women in Uzbekistan give more live births than in urban area: 1.8 times of having fourth+ and 1.2 times higher probability of having third ordered live births.

Educational attainment. Among married women in Uzbekistan only those who graduated from primary and secondary educations and have fourth+ ordered live births have difference

from married higher educated women. Thus, the women with primary education have 4.1 times higher and the women with secondary education have 1.8 times higher odds compared to higher educated married women in Uzbekistan. (see Table 21)

Table 21 - The results of multinomial logistic regression, Married. Uzbekistan

Submodel 2

Effect	Live birth order	Esti-mations	p-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	2.0561	<.0001	7.816	4.025	15.177
Kazakhs vs Russians	3	1.1124	0.0001	3.042	1.737	5.327
Uzbeks vs Russians	4	1.8593	<.0001	6.419	3.448	11.950
Uzbeks vs Russians	3	1.0907	<.0001	2.976	1.802	4.915
Other(in UZB) vs Russians	4	1.8812	<.0001	6.561	3.458	12.452
Other(in UZB) vs Russians	3	0.9953	0.0002	2.706	1.591	4.601
Place of residence						
Rural vs Urban	4	0.5930	<.0001	1.809	1.592	2.057
Rural vs Urban	3	0.1612	0.0179	1.175	1.028	1.343
Educational attainment						
Primary vs Higher	4	1.4221	0.0231	4.146	1.216	14.137
Secondary vs Higher	4	0.5868	<.0001	1.798	1.467	2.204

Data: UZDHS-1999. Author's calculations by SAS.
Note: Green colored numbers show negative effects.

Ukraine. *Place of residence.* (see Table 22). As well as in Kazakhstan and Uzbekistan, in Ukraine, probability of marital fertility in rural area higher than in urban one, thus, in rural women have 1.7 times higher odds of giving fourth+, 1.5 times higher of delivering third and 1.7 times less of having first ordered live births compared to women living in urban settlement.

Educational attainment. Married women with primary education have 23.6 and 8.3 times odds which are higher probabilities of having fourth+ and third ordered live births compared to those married women, who have higher education in Ukraine. The women, who graduated from secondary school, have 4.6 and 1.6 times higher of giving fourth+ and third live births, but 0.8 times less odds of giving first ordered live births compared to the women with higher education (see Table 22).

Table 22 - The results of multinomial logistic regression. Married. Ukraine

Submodel 2

Effect	Live birth order	Esti-mations	P-value	Odds ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	0.5553	0.0053	1.742	1.179	2.575
Rural vs Urban	3	0.4323	0.0003	1.541	1.216	1.953
Rural vs Urban	1	-0.3373	<.0001	0.714	0.635	0.801
Educational attainment						
Primary vs Higher	4	3.1634	0.0004	23.651	4.054	137.967
Primary vs Higher	3	2.1222	0.0031	8.349	2.042	34.136
Secondary vs Higher	4	1.5345	<.0001	4.639	2.950	7.293
Secondary vs Higher	3	0.5193	<.0001	1.681	1.329	2.126
Secondary vs Higher	1	-0.1423	0.0167	0.867	0.772	0.975

Data: UKDHS-2007 Author's calculations by SAS.
Note: Green colored numbers show negative effects.
Note: In Ukraine DHS data are no information about ethnicity.

LIVING TOGETHER

In Kazakhstan the women, who are in marital status "Living together" have difference in probability of having fourth+ ordered live births between other ethnic groups and Russian ethnicity: others have 13.0 times higher odds than Russian ethnicity, whereas in Uzbekistan absolutely no differences in all parameters of ethnicity, place of residence and educational attainment of having live births at all. However, in Ukraine, fertility is distinguished by place of residences in giving first ordered live born children: the women, who live together with their partners in rural area, have 0.5 times the odds of women with the same status in an urban environment. (see Tables 23, 24.)

Table 23 - The results of multinomial logistic regression. Living together. Kazakhstan

Submodel 2

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Other(in KAZ) vs Russians	4	2.5572	0.0328	12.900	1.232	135.016

Data: KDHS-1999. Author's calculations by SAS.

Table 24 – The results of multinomial logistic regression. Living together. Ukraine

Submodel 2

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	1	-0.6353	0.0297	0.530	0.299	0.939

Data: UKDHS-2007. Author's calculations by SAS.
Note: Green colored numbers show negative effects.
Note: In Ukraine DHS data are no information about ethnicity.

WIDOWED

Each significant parameter of widowed women in Kazakhstan, and Uzbekistan have difference in giving fourth+ ordered live births, however in Ukraine no parameters with significant p-values at all. Thus, Kazakh widowed women in Kazakhstan have 2.7 times higher and in Uzbekistan 10.3 times higher probability than Russian ones, also widowed women in Kazakhstan have 6.1 times higher odds of giving fourth+ live births in rural area than in urban one. (see Table 25, 26)

Table 25 – The results of multinomial logistic regression. Widowed. Kazakhstan

Submodel 2

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	1.0127	0.0355	2.753	1.071	7.077
Place of residence						
Rural vs Urban	4	1.8216	<.0001	6.181	2.614	14.618

Data: KDHS-1999. Author's calculations by SAS.

Table 26 – The results of multinomial logistic regression. Widowed. Uzbekistan

Submodel 2

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	2.3330	0.0130	10.309	1.635	64.996

Data: UZDHS-1999 Author's calculations by SAS.

DIVORCED

No differences in parameters of divorced women in Kazakhstan, whereas in Uzbekistan only parameters of place of residence differs: divorced women in rural settlements have 7.0 times higher odds of having fourth+ ordered live born children than in urban area, and in Ukraine parameters of place of residence and educational attainment are significant: divorced women in rural area have 0.6 times less probability of having first ordered live birth compared to divorced women in urban area. In Ukraine parameters of education attainment expose a difference between women with secondary and women with higher education, thus, divorced with secondary education have 7.7 times higher of having a fourth+ live birth, 2.1 times

higher of having a third and 0.7 times less probability of having first ordered live born children than divorced with higher education. (see Tables 27 and 28)

Table 27 – The results of multinomial logistic regression. Divorced. Uzbekistan

Submodel 2

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	1.9443	0.0051	6.989	1.792	27.25

Data: UZDHS-1999. Author's calculations by SAS.

Table 28 – The results of multinomial logistic regression. Divorced. Ukraine

Submodel 2

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	1	-0.4283	0.0098	0.652	0.471	0.902
Education						
Secondary vs Higher	4	2.0473	0.0089	7.747	1.672	35.897
Secondary vs Higher	3	0.7261	0.0383	2.067	1.040	4.108
Secondary vs Higher	1	-0.4003	0.0116	0.670	0.491	0.914

Data: UKDHS-2007. Author's calculations by SAS.
Note: Green colored numbers show negative effects.

12.6 Main Findings

To conclude the discussion about the results of the multinomial logistic regression it is necessary to highlight that fertility level by ethnicity is the highest among traditional ethnicities. Almost all results demonstrated that Uzbek and Kazakh women have differences from Russian women, whereas Ukrainian women do not differ from Russians a lot. It was observed that some ethnicities living in a "traditional" country have a slightly higher average birth order comparing to their titular co-ethnicity, which confirms that environment plays the most important role in fertility. For instance, Kazakhs in Uzbekistan (traditional country) have a higher number of live births than Kazakhs in Kazakhstan; Ukrainians have higher fertility levels in Kazakhstan and Uzbekistan in comparison to Ukrainians in Ukraine. From this point of view, living in a more traditional society means giving more live births than in a non-traditional environment. Moreover, urban-rural differences confirm the hypothesis since people in rural areas tend to adhere to traditional values more often than urban populations. That is why in all of the selected countries fertility level in rural areas was found to be higher than in urban settlements.

It is clear that most live births occur within marriage, as a law of nature; however, the abovementioned results demonstrate that live births among never married occur more among non-traditional ethnicities (Ukrainians and Russians) than among never married women of mixed-traditional Kazakh ethnicity (in Uzbekistan women do not report themselves as never married (see Chapter 10.6 of Section III)). The women who live together with their partners have higher average live birth order than divorced women compared to married one. Widowed women show no significant difference in odds ratios compared to the married women[2].

Along with ethnicity, marital status, place of residence, and educational attainments were found to be important factors determining fertility. However, level of education has the biggest influence on non-traditional Ukrainians and Russians than traditional Uzbek societies.

To summarize the Section III of the research paper, the main research questions (Q) and hypothesizes (H) are as follows.

Q.1b What differences were there between specific birth orders in Kazakhstan, Uzbekistan and Ukraine by ethnicity, marital status, place of residence, and educational attainment based on national representative data of DHS (Demographic and Health Survey).

H.1b Average birth order per woman in Kazakhstan, Uzbekistan and Ukraine is obviously distinguished by ethnicity, marital status, place of residence, and educational attainment due to different social, cultural, economic attributes of the selected countries. Thus, average birth order in Uzbekistan was on the highest level at about 2.37, whereas in Kazakhstan it was observed to be lower – 2.01, and in Ukraine it was on the lowest level – 1.51. Kazakh women gave more births outside of Kazakhstan than in the country, Ukrainian women also gave fewer births in Ukraine than outside it (in Kazakhstan on 0.10, in Uzbekistan on 0.19). Russian women in Kazakhstan gave almost the same average birth order with the slight difference of 0.1. At the same time, marital status and level of education of woman both play an important role in live births as well.

Q.2b What was the age of respondents with children according to ethnicity in Kazakhstan – 1999, Uzbekistan – 1996 and Ukraine – 2007?

H.2.b Mean age at childbearing of respondents is lower among traditional Uzbekistani society than in mixed and non-traditional ones. All respondents are much younger in Uzbekistan than in Kazakhstan and Ukraine. Thus, Kazakhs in Kazakhstan have children at the age of 36.8, whereas Kazakhs in Uzbekistan have children at much younger ages – 28.0. Mean age of childbearing of Russians in Kazakhstan at the age of 37.9 and in Uzbekistan – 25.2. Ukrainian respondents in Kazakhstan (37.2) and Ukraine 37.7) are almost at the same age of childbearing, whereas in Uzbekistan they are 25.0 years old. The Uzbek respondents are on average at the age of 26.0; and other ethnic groups in Uzbekistan (36.5) are also younger than other ethnic groups in Kazakhstan (27.9). Therefore, Uzbekistani respondents have a mean age at childbearing lower than 30, whereas Kazakhstani and Ukraine's – after, which can be related to postponement of births factor.

[2] All results of modeling have been adjusted for age differences and included in Annex II.

Q.3b What are the main features of interpretation of "Living together" and "Cohabitation" in non-traditional and traditional societies?

H.3b In a traditional society, a wedding ceremony is much more important than legal registration of marriage; such unions can be interpreted as "cohabited partnerships", whereas in a non-traditional society cohabitation cannot mean marriage, it can be regarded as living together before marriage. According to the DHS data those women who live together with their partners consider them to be real husbands or fathers of their children (almost across among traditional ethnicities). In Kazakhstan, living together is more prevalent among illegal migrants from different countries who cannot register their marriage. On the other hand, it is most likely that those people from non-traditional ethnicities who live together are simply gaining experience of living together before registering their marriage and do not want to obligate each other financially.

Q.4b According to DHS how should the relationship between country, ethnicity, marital status, place of residence and educational attainment factors be described?

H.4b Variations between countries, ethnicities, marital statuses, places of residence and educational attainments exist due to ethnic-cultural aspects. However, fertility differences across urban/rural areas and levels of education can be similar in the countries, whereas fertility differences by marital status can be significant. Ethnic-cultural difference is one of the most explicit aspects of fertility. Based on multidimensional calculations, each of the mentioned aspects showed country-, ethnicity-, marital status-, place of residence- and education-specific differences. For instance, Model I was constructed to highlight ethnic-cultural aspects, whereas Model II was meant to highlight country-specification. In addition to these models, two submodels were constructed, which highlighted ethnicity in general and marital status by country. Almost in all results in the analysis above, women had higher probabilities of having live births in rural area than in urban areas across all ethnicities. Comparison of levels of education in each model and submodel were included as well and it was found to have an important effect on fertility behavior of ethnicities as well.

Q.5b What is the nature of fertility behavior of ethnicities in their historical countries? Where more of live births are recorded – inside or outside of a historical country?

H.5b Kazakhs in Kazakhstan, Uzbeks in Uzbekistan, and Ukrainians in Ukraine were recorded to give more births in the home countries (a more comfortable place to give birth) than outside of it. Kazakhs in Kazakhstan have lower odds ratios of having fourth+ live births than they have in Uzbekistan, it is higher odds than traditional Uzbeks have in Uzbekistan in comparison with Russian ethnicity. Thus, odds ratios of Kazakhs for fourth+ live births: Kazakhstan 5.1; Uzbekistan 7.9; whereas odds ratios of Uzbeks for fourth+ live births in Uzbekistan is 5.8. Ukrainian women have only one significant value in odds ratios of having fourth+ live births, which is 1.9 times higher odds ratio comparing to Russian ethnicity in

Kazakhstan. Other comparisons of Ukrainians versus Russians show no significance in Kazakhstan and Uzbekistan.

Q.6b Are there differences between non-traditional ethnicities such as Russians and Ukrainians and are there differences between mixed-traditional and traditional such as Kazakhs and Uzbeks?

H.6.b Fertility patterns of Russians and Ukrainians do not differ because they are non-traditional ethnicities, whereas fertility patterns of Kazakhs and Uzbeks were found to show some differences because the representatives of Kazakh ethnicity have a more modern kind of view on family formation than representatives of Uzbek ethnicity. This hypothesis proved to be relevant: it is seen in almost all results of modeling comparing Russians to Ukrainians, most of their numbers are statistically insignificant. For example, Ukrainian ethnicity have 1.9 times higher odds of having fourth+ live born ordered child compared to Russian one and contrasting with second ordered live birth, and other non-referenced categories as first and third child do not have statistically significant p-value (less or equal to 0.05), which means that Ukrainian and Russian ethnicities do not differ significantly in fertility behavior of having third and first live births.

Q.7b What is the fertility difference between those 'never married' women in Kazakhstan, Uzbekistan and Ukraine?

H.7b "Never married" women in Ukraine have the highest fertility compared to similar in Kazakhstan and Uzbekistan. According to the results of Model II, in Kazakhstan, never married women have 5.2 times higher probability of having first live births compared with married women. In Uzbekistan, never married women have not been reported. In Ukraine, never married women have 10.0 times higher odds ratio of having first live births compared to married women. However, according to Submodel 2, in which country variations according to marital status were analyzed, "Never married" showed no significances at all.

Q.8b What are the fertility preferences according to ethnicity in general?

H.8b Each ethnicity has its specific fertility preferences. However, traditional ethnicities do not differ from each other, and there is no difference between non-traditional as well. According to the results of Model II, each ethnicity is distinguished in fertility. Kazakhs have 5.8 times higher odds of having fourth+ child, 2.2 times higher odds of having third live born child and also they have 0.8 times lower risk of having first child than Russians when those birth orders are contrasted with a referenced second child. Ukrainian ethnicity has 1.9 times higher odds of having fourth live born child compared to Russian one, and other non-referenced categories as first and third child do not have statistically significant p-value (less or equal to 0.05), which means that Ukrainian and Russian ethnicities do not differ significantly in fertility behavior of having third and first live births. Uzbeks, compared with Russians, have 0.8 times less of having first live born children; however, they showed higher risks of having third (2.1 times) and fourth+ (4.0 times) live born children than Russians when

contrasting with second live births. Other ethnic groups compared with Russians have 3.9 times higher risks of having fourth+ and 2.0 times higher risks of having third live births, however, do not differ in propensity to have first child. Thus, traditional Uzbek ethnicity have less probability of having fourth+ live born children than mixed-traditional Kazakh ethnicity in comparison to non-traditional Russian communities.

Q.9b What are variations of fertility by marital status in each of the selected countries?

H.9b Marital status plays an important role in having children, however in Ukraine single women have higher fertility than in Kazakhstan and Uzbekistan. In Kazakhstan, Uzbekistan and Ukraine, married women according to ethnicity have more significant odds ratios among other marital statuses. Never married women in Ukraine have higher probability of having live births compared to Kazakhstan and Uzbekistan. However, women, who live together with their partners, have higher probabilities of having children in Kazakhstan and Uzbekistan than in Ukraine. However, in Ukraine never married women have 10.0 times higher of having first live births compared with married women. The women, who have been living together with their partners, have 2.5 times higher of having fourth+ and 1.4 times higher of having first live born children than women who are married.

CONCLUSION

The main focus of this research paper is to make a thorough investigation of recent changes in fertility patterns of women of reproductive ages in Kazakhstan across ethnicity and marital status and, accordingly, to compare fertility behavior in Uzbekistan and Ukraine.

During the detailed investigation of marital and extramarital fertility in Kazakhstan it was found that most of children are delivered within marriage, whereas births outside of marriage are less frequent and their number is decreasing. However, among traditional Uzbek ethnicity in Kazakhstan, trend of the proportion of extramarital live births is increasing, but in reality there are no births without a wedding ceremony in Uzbekistan. This can be explained by the increasing number of illegal Uzbek migrants in Kazakhstan: they deliver their children in free-of-charge state hospitals and do not show their passports and certificate of marriages there in order to avoid problems with documentation. However, by the "common law", they have "husbands". This idea is supported by the fact that in Uzbekistan women do not report themselves as single mothers who have never been married in order to be "respectful" to their community, even in front of an interviewer. Such behavior demonstrated that Uzbek ethnicity can be regarded as a traditional ethnicity.

Meanwhile, among never married women, Ukrainian ethnicity showed the highest (10.5 times) probability of having first ordered live births compared to the married women, and slightly increasing trend of the proportion of extramarital births from 21.1 in 1999 to 22.6 in 2008, which can confirm the fact that extramarital live births may occur more in the future among Ukrainians than among other considered ethnicities.

In Uzbekistan, Kazakh women give birth more frequently than Uzbek women. This can be explained by the fact that Kazakh ethnicity is a "flexible" society in a sense that living among non-traditional Russians and Ukrainians (as in Northern parts of Kazakhstan) they behave as non-traditional ethnicities, i.e. have fewer children. However, those living in a "traditional environment" (as in Southern parts of Kazakhstan or in Uzbekistan) they behave as traditional ones, i.e. have higher fertility levels.

Nowadays, a Family policy is an important and integral part of population policy in many countries of the world. Population policy in Kazakhstan is conducted indirectly: through various social programs on family, marriage, healthcare and children aimed at supporting fertility. In order to achieve long-term goals (including fertility) of the country, the national "Kazakhstan-2030" Strategy was adopted, as was mentioned in the dissertation. Various implemented social programs did have a positive influence on total fertility rates which increased from 1.62 in 1999 to 2.45 in 2008. Multi-ethnicity is one of the significant demographic features of the country. It is obvious that traditional ethnicities have higher live births. During the study period, an increasing number of live births among non-traditional ethnicities has been observed. Thus, between 1999 and 2006 in Kazakhstan total fertility rate among Uzbeks increased from 2.86 to 3.81, among Kazakhs – from 1.88 to 2.50, among Ukrainians – from 1.35 to 1.53, among Russians – from 1.00 to 1.18, and among other ethnic groups – from 1.26 to 1.69.

At the same time, education plays an important role in determining fertility patterns. According to the results of the presented research, odds ratio of having fourth+ live birth are 3.6 higher among uneducated women than among educated ones contrasting with second live birth order. Those women who graduated from only primary educational establishments have about 5.1 times higher probability of having fourth+ live born child than those who have graduated from higher school. The women, who graduated from secondary schools, have 2.5 times higher odds of having fourth+ live births, 1.4 times higher odds of having third and 0.8 times lower odds of having first live born child compared with the women with higher education.

Probability of educational attainment is higher among non-traditional ethnicities than among traditional ones. For instance, Kazakh women, who graduated from the secondary education, have 2.6 times higher probability of having fourth+ live births and 1.3 times higher odds ratio of having third live births compared to those women, who have higher education. Russian women show almost no differences in levels of education, only women with secondary education have 2.7 times higher odds ratios of having fourth+ ordered live born children than higher educated ones. Uneducated Ukrainian women have a similar fertility behavior to better educated ones, but those women who have primary education have 15.8 times higher of having fourth+ and 6.7 times higher probability of having third ordered live born children than those who have higher education. However, between women with primary and higher education there is no difference in having first live birth order. There are apparent differences between those who have secondary and higher education: women with secondary education have 5.5 times higher probability of delivering fourth+ live births, 1.7 times higher probability – of delivering third live births, and 0.8 times lower odds of having first ordered live born children than higher educated women in contrast to second live births.

Fertility behavior by education is almost not distinguished among Uzbek women. However, women with primary educated have 4.5 times higher probability and women with secondary education have 1.9 times higher probability of having fourth+ ordered live births compared to those women who graduated from high schools. It should also be highlighted,

that in fertility behavior education plays a comparatively bigger role than ethnicity, especially among non-traditional ethnicities.

References and internet sources

AGENCY OF STATISTICS OF THE REPUBLIC OF KAZAKHSTAN. 2008c. Territorial organs of the Agency of Statistics of the Republic of Kazakhstan. Accessed at <<http://www.eng.stat.kz/about/Pages/struct.aspx>> on 13 February, 2010.

ALEXEENKO, A.N. 2004. Kazakhstan's way of modernization: ethnodemographic aspect. (Казахстанский путь модернизации: этнодемографический аспект) // Demoscope Демоскоп № 183 – 184 20 December 2004 - 9 January, 2005

ALEXEENKO, N.B., ALEXEENKO, A.N. 1999. Population of Kazakhstan during the 100 years (1897-1997). Ust-Kamenogorsk city. (Население Казахстана за 100 лет (1897-1997 гг.). Усть-Каменогорск).

ALIKHAN A. 1999. POPULATION MIGRATION IN UZBEKISTAN (1989-1998) Second Edition, Tashkent. United Nations High Commissioner for Refugees.

AGADJANIAN, V. 1999. Post-Soviet Demographic Paradoxes: Ethnic Differences in Marriage and Fertility in Kazakhstan Author(s): Source: Sociological Forum, Vol. 14, No. 3 (Sep., 1999), pp. 425-446 Published by: Springer Stable URL: http://www.jstor.org/stable/684873 Accessed: 04/01/2010 11:56.

AGADJANIAN, V., DOMMARAJU, P., GLICK, J.E. 2007. Reproduction in Upheaval: Crisis, Ethnicity, and Fertility in Kazakhstan.

AGADJANIAN, V., GLICK, J.E. 2008. Reproduction in upheaval: Ethnic-specific fertility responses to societal turbulence in Kazakhstan; Premchand Dommaraju; Arizona State University. Assessed in http://www.informaworld.com/smpp/title~content=t713689546 on 29 June 2009.

BECHER, C.M., URZHUMOVA, D.S., 2004. Mortality recovery and stabilization in Kazakhstan, 1995-2001.

BEKMAHANOVA, N.E. 1986. Multiethnic population of Kazakhstan and Kyrgyzstan during the period of capitalism (from 1860 to 1917). Moskow. (Многонациональное

население Казахстана и Киргизии в эпоху капитализма (60-ые годы XIX в. – 1917 г.).

BILLARI, F.C., KOHLER, H.P., ANDERSSON, G., LUNDSTRÖM, H. 2007. Approaching the Limit: Long-Term Trends in Late and Very Late Fertility. Population and Development Review 33(1):149-170.

BILLARI, F.C., PHILIPOV D. 2004. Education and the Transition to Motherhood: a Comparative Analysis of Western Europe. in European Demographic Research Papers Series. Vienna: Vienna Institute of Demography.

BILLARI, F.C. 2008. Lowest-Low Fertility in Europe: Exploring the Causes and Finding Some Surprises. The Japanese Journal of Population, Vol.6, No.1 (March 2008). Assessed on 27 April, 2010 from http://www.ipss.go.jp/webj-ad/webJournal.files/population/2008_4/01billari.pdf.

BILLINGSLEY, S. (2009). The post-communist fertility puzzle. Population Research and Policy Review, Advance Access published April 21.

CHILD SAFETY SERVICES - http://www.childsafety.qld.gov.au

DEMOGRAPHIC AND HEALTH SURVEY - www.measuredhs.com.

DYUSSUPOVA, S. 2010. Recent changes in extramarital fertility in Kazakhstan. 2nd Demographic Conference of Young Demographers, Prague. 17 Feb 2010.

ESIMOVA, A.B. 2006. Policy related to fertility in the Republic of Kazakhstan. (Политика в области рождаемости в республике Казахстан) // Демоскоп № 235 – 236 20 February - 5 March.

EUROPEAN POPULATION CONFERENCE, 26-30 August, 2003. Population of Central and Opportunities. Statistical Publishing Establishment. Warsaw.

FAMILY CODE OF RUSSIA - http://www.kadis.ru/kodeks.phtml?kodeks=15 Assessed on 22 of November 2010.

FAMILY CODE OF UKRAINE - http://meget.kiev.ua/kodeks/semeyniy-kodeks/ Assessed on 20 of November 2010.

FREJKA, T. AND SARDON, J. P. (2006). First birth trends in developed countries: Persisting parenthood postponement. Demographic Research 15(6): 147-180. Assessed in January, 2010, from http://www.demographic-research.org/cgi-bin/pages.plx?pageid=52&link=cgi&ref=479&cm=0

FREJKA, T. (2008). Determinants of family formation and childbearing during the societal transition in Central and Eastern Europe. Overview Chap. 5 in T. Frejka, T. Sobotka, J. M. Hoem, & L. Toulemon (Eds.), Childbearing trends and policies in Europe. Demographic Research, Special Collection 7, Vol. 19(7), pp. 130–170, from http://www.demographic-research.org/volumes/vol19/7/.

GUMILYOV L. (2005) Ethnogenesis and the Biosphere, АСТ, Астрель, 2005.

ISCED (UNESCO)- http://www.uis.unesco.org/TEMPLATE/pdf/isced/ISCED_A.pdf. Assessed on 28 of Nov 2010.

INFO-TSES, KAZAKHSTANI NEWSPAPERS, Assessed on 2 May, 2010 from http://www.info-tses.kz/red/article.php?article=12159.

HAJNAL, J. (1965). "European marriage patterns in perspective", in GLASS, D.V. et. EVERSLEY, D.E.C. (ed.), Population in History, Londres, Edward Arnold: 101-143.

HTTP://MANSUROVS.COM/UMID/MAIN/UZBEKISTAN/POPULATION/POPULATION.HTML - Umid World - information about Uzbekistan. Assessed on 27.11.2010

KOHLER, H.P., KOHLER, I. 2002. Fertility decline in Russia in the early and mid-1990s: The role of economic uncertainty and labour market crises." European Journal of Population 18(3):23-262.

KUIJSTEN, A. 1995. Recent Trends in Household and Family Structures in Eurape: An Overview. Amsterdam. Household demography and household modelling (The Springer Series on Demographic Methods and Population Analysis) by Evert van Imhoff, Anton Kuijsten, Pieter Hooimeijer, and Leo J.G. van Wissen (Hardcover - 31 Oct 1995) p.53-84.

LAWRU OF RUSSIA - http://lawru.info/legal2/se16/pravo16579/index.htm -Assessed on 26 of November 2010.

LAWS OF UZBEKISTAN - Assessed on http://www.pravo.uz/archive/get_data.php3?topic=1958&sub=0#0 Assessed on 3 of December 2010.

LESTHAEGHE, R., & VAN DE KAA, R. (1986). Twee demografische transities? In D. van de Kaa & R. Lesthaeghe (Eds.), Bevolking: groei en krimp (pp. 9–24). Deventer: Van Loghum Slaterus.

MASANOV, N.E., ABYLHOZHYN, Z.B., EROFEEVA, I.V. et al. 2001. History of Kazakhstan: populations and cultures: tutorial. Almaty: Dike-Press (История Казахстана: народы и культуры: учебное пособие - Алматы: Дайк-Пресс).

MATERIALS FROM THE CONFERENCE. 1999. Международная научно-практическая конференция. Этнодемографические процессы в Казахстане и сопредельных территориях. 14-15 декабря, 1999. СТОЛЯРОВА, Л.В. Гражданская и этническая идентичность в Казахстане: общее и особенное. Стр.3-7.

MATERIALS FROM THE CONFERENCE. 2003. Международная научно-практическая конференция. Этнодемографические процессы в Казахстане и сопредельных территориях. 20-21 октября, 2003. АЛЕКСЕЕНКО, А.Н. Стратегия демографического развития Республики Казахстан: региональный аспект. Стр.33-40.

NEWSPAPERS. ARTICLE. IMMIGRATION FROM CENTRAL ASIA. Assessed on 12 January, 2010 from http://www.kazaag.kz/showarticle2.php?id=17034. Иммиграция из стран Центральной Азии: преимущества и угрозы.

POPULATION BULLETIN OF THE UNITED NATIONS. 1999. Bellow replacement Fertility. Special Issue Nos40/41. Fertility Trends among low fertility countries. Population Division. p. 35-125.

RYCHTAŘÍKOVÁ, J. 2007. EU demographics: Living more and reproducing less Department of Demography and Geodemography, Faculty of Science, Charles University in Prague. Pharmaceuticals Policy and Law. Volume 9, Volume 9/2007.

Assessed on 28 of March from http://iospress.metapress.com/content/7uathgp47rl14g74/fulltext.pdf

RYCHTAŘÍKOVÁ, J. 1999. Is Eastern Europe experiencing a second demographic transition? ACTA Universitas Carolinae, Geographica, N. 1, p.19-44.

RULES from 12.07.200 N1063 "The rules of recording and registration of the population in the Republic of Kazakhstan".

SOBOLEVA, S. 1980. Migration and settlement: Soviet Union. Institute of Economics and Industrial Engineering of the USSR Academy of Sciences, Novosibirsk.

SOBOTKA, T. (2002). Ten years of rapid fertility changes in the European post-communist countries: Evidence and interpretation. Population Research Centre Working Paper Series 02-1, July.

SOBOTKA, T. 2004. Postponement of Childbearing and Low Fertility in Europe.

SOBOTKA, T., ŠŤASTNÁ, A., ZEMAN, K., HAMPLOVÁ, D., KANTOROVÁ, V. 2008. Czech Republic: A rapid transformation of fertility and family behavior after the collapse of state socialism. Demographic Research, July 2008.

SOCIAL ECONOMIC GEOGRAPHY OF UKRAINE, 1998. Edited by Shablii O., Lvov: Svit,- 640 p. (Социально-экономическая география Украины. Под ред. О. Шаблия. — Львов: Свит,—640с.)

SHERBAKOVA E. - DEMOSCOPE WEEKLY

http://demoscope.ru/weekly/2007/0293/barom03.php - 22 of November 2010, In Russia, Belorussia, Kazakhstan and Ukraine major dwelling is – apartment, in Central Asian and Azerbaijan – detached house. (В России, Белоруссии, Казахстане и на Украине преобладающий тип жилья - отдельная квартира, в Средней Азии и Азербайджане - индивидуальный дом), № 293 – 294 18 June - 1 July 2007.

TAVADOV, G.T. 2007. Ethnology. Modern glossary. Moscow: Dialog of cultures. (Этнология. Современный словарь-справочник - Москва: Диалог культур).

WWW.AKORDA.RU – Official Site of the President of the Republic of Kazakhstan.

WWW.CENSUS.GOV – The United States Census Bureau.

WWW.MINJUST.KZ/RU/ART/«КАК_ЗАРЕГИСТРИРОВАТЬ_РОЖДЕНИЕ» - Official site of the Ministry of Justice of Kazakhstan.

WWW.WORLDBANK.ORG – International Data Catalog.

Annex I

Annex 2 - Ethnic structure of population in Kazakhstan, in 1999 and 2009

	Absolute number of population		Ratio 2009 /1999 in %	Increment (+), Decrement (-)		Weight in % from total number of population	
	1999	2009		Absolute number	%	1999	2009
Total population	14981281	16009597	106,9	1028316	6,9	100	100
of which:							
Kazakhs	8011452	10096763	126.0	2085311	26.0	53.5	63.1
Russians	4480675	3793764	84.7	-686911	-15.3	29.9	23.7
Uzbeks	370765	456997	123.3	86232	23.3	2.5	2.9
Ukrainians	547065	333031	60.9	-214034	-39.1	3.6	2.1
Uigurs	210377	224713	106.8	14336	6.8	1.4	1.4
Tatars	249052	204229	82.0	-44823	-18	1.7	1.3
Germans	353462	178409	50.5	-175053	-49.5	2.4	1.1
Koreans	99944	100385	100.4	441	0.4	0.7	0.6
Turkishs	75950	97015	127.7	21065	27.7	0.5	0.6
Azerbaijans	78325	85292	108.9	6967	8.9	0.5	0.5
Belarusians	111924	66476	59.4	-45448	-40.6	0.7	0.4
Dungans	36945	51944	140.6	14999	40.6	0.2	0.3
Kurds	32764	38325	117.0	5561	17	0.2	0.2
Tadjiks	25673	36277	141.3	10604	41.3	0.2	0.2
Polands	47302	34057	72.0	-13245	-28	0.3	0.2
Chechens	31802	31431	98.8	-371	-1.2	0.2	0.2
Kyrgyzs	10925	23274	213.0	12349	113	0.1	0.1
Others	206879	157215	76.0	-49664	-24	1.4	1.1

Source: http://www.stat.kz/p_perepis/Documents/Перепись%20рус.pdf

Annex 3 – Change of ethnic structure of Ukraine in 1959-2001 (by Census data)

	The share of ethnic groups to total population of the country (%%)					**Absolute number of ethnicities (in thousands)**					**Absolute increment (thousands) in 1989-2001**
	1959	**1970**	**1979**	**1989**	**2001**	**1959**	**1970**	**1979**	**1989**	**2001**	
Ukrainians	76.80	74.90	73.60	72.70	77.80	32158.5	35283.9	36489.0	37419.1	37541.7	122.6
Russians	16.90	19.40	21.10	22.10	17.30	7090.8	9126.3	10471.6	11355.6	8334.1	-3021.5
Belarusians	0.69	0.82	0.82	0.86	0.57	290.9	385.8	406.1	440.0	275.8	-164.2
Moldavians	0.58	0.56	0.59	0.63	0.54	241.7	265.9	293.6	324.5	258.6	-65.9
Crimean Tatars	-	-	-	0.09	0.52	-	-	-	46.8	248.2	201.4
Bulgarians	0.52	0.50	0.48	0.45	0.43	219.4	234.4	238.2	233.8	204.6	-29.2
Hungarians	0.36	0.33	0.33	0.32	0.33	149.2	157.7	164.4	163.1	156.6	-6.5
Rumanians	0.24	0.24	0.25	0.26	0.31	100.9	112.1	121.8	134.8	151.1	1.3
Polands	0.87	0.63	0.52	0.43	0.30	363.3	295.1	258.3	219.2	144.1	-75.1
Jews	2.01	1.65	1.28	0.95	0.22	840.3	777.1	634.2	486.3	103.6	-382.7
Armenians	0.07	0.07	0.08	0.10	0.21	28.0	33.4	38.6	54.2	99.9	45.7
Greeks	0.25	0.23	0.21	0.19	0.19	104.4	106.9	104.1	98.6	91.5	-7.1
Tatars	0.15	0.16	0.18	0.17	0.15	61.5	76.2	90.5	86.9	73.3	-13.6
Gipsys	5.00	0.06	0.07	0.09	0.10	22.5	30.1	34.4	47.9	47.6	-0.3
Azerbaijans	-	0.02	0.03	0.07	0.09	-	10.8	17.2	37.0	45.2	8.2
Georgians	0.02	-	-	-	0.07	11.6	-	-	-	34,2	-
Germans	0.06	0.06	0.07	0.07	0.07	23.1	29.9	34.1	37.8	333.0	-4.5
Gagauzs	0.05	0.06	0.06	0.06	0.07	23.5	26.5	29.4	32.0	31.9	-0.1
Non-ukrainians	23.2	25.1	26.4	27.30	22.2	9710.5	11842.6	13120.3	14032.9	10510.6	-3522.3
Total population	100	100	100	100	100	41869	47126.5	49609.3	51452.0	48052.3	-

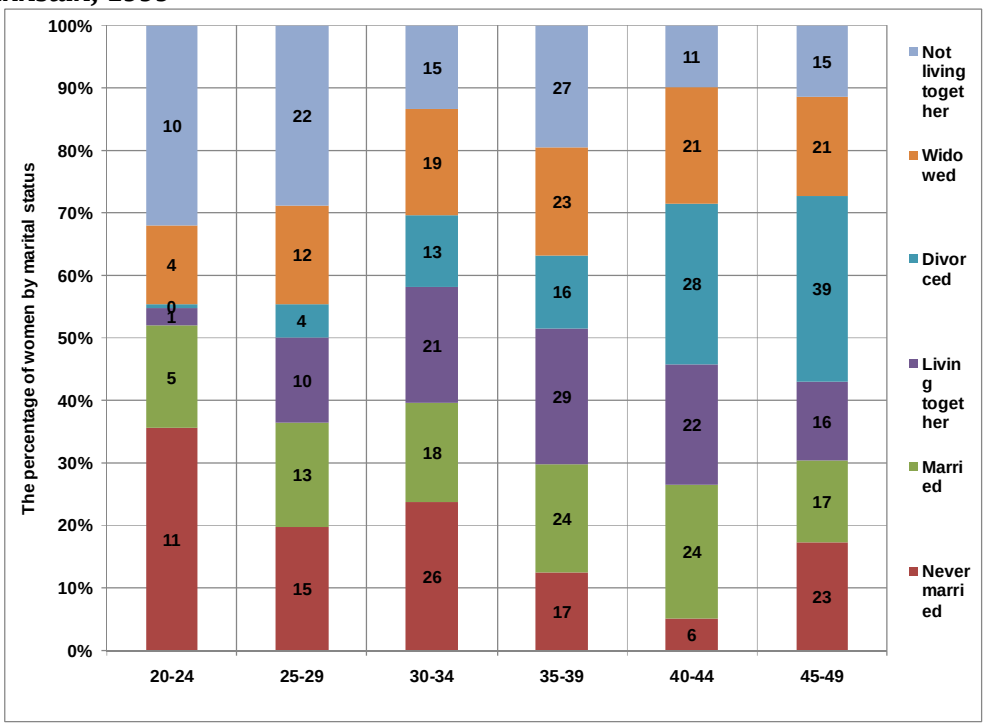
Source: ***http://demoscope.ru/weekly/2004/0173/analit05.ph***

Annex 4 – The ethnic structure of the Republic of Uzbekistan. Population, census data

	Absolute numbers in thousands				**As % of total populations**			
	1959	**1970**	**1979**	**1989**	**1959**	**1970**	**1979**	**1989**
Total pop.	8105.5	11799	0 15389.3	19810.1	100	100	100	100
Of which:								
Uzbeks	5038.3	7724.4	10569.0	14142.5	62.2	65.4	68.7	71.4
Russians	1090.3	1473.5	1665.7	1653.5	13.5	12.5	10.8	8.3
Tajiks	311.4	448.5	594.6	933.6	3.8	3.8	3.9	4.7
Kazakhs	335.3	476.3	620.1	802.2	4.1	4.0	4.0	4.1
Tatars	444.8	573.7	648.8	656.6	5.5	4.9	4.2	3.3
Karakalpaks	168.3	230.3	297.8	411.9	2.1	1.9	1.9	2.1
Kyrgyzs	92.7	110.7	142.2	174.9	1.1	1.0	0.9	0.9
Koreans	138.5	147.5	163.1	183.1	1.7	1.3	1.1	0.9
Ukrainians	87.9	111.7	113.8	153.2	1.1	0.9	0.7	0.8
Turkmens	54.8	71.0	92.3	121.6	0.7	0.6	0.6	0.6
Turks	21.3	46.3	48.7	106.3	0.3	0.3	0.3	0.5
Jews	94.3	102.9	99.9	93.9	1.2	0.9	0.7	0.5
Armenians	27.4	34.2	42.4	50.5	0.3	0.3	0.3	0.3
Azerbaijanians	40.5	38.9	59.8	44.4	0.5	0.4	0.4	0.2
Uyghurs	19.4	23.9	29.1	35.8	0.2	0.2	0.2	0.2
Belorussians	9.5	16.9	19.1	29.4	0.1	0.1	0.1	0.1
Persians	-	15.5	20.0	24.8	-	0.1	0.1	0.1
Other nation.	151.9	194.5	162.9	191.9	1.9	1.7	1.1	1.0

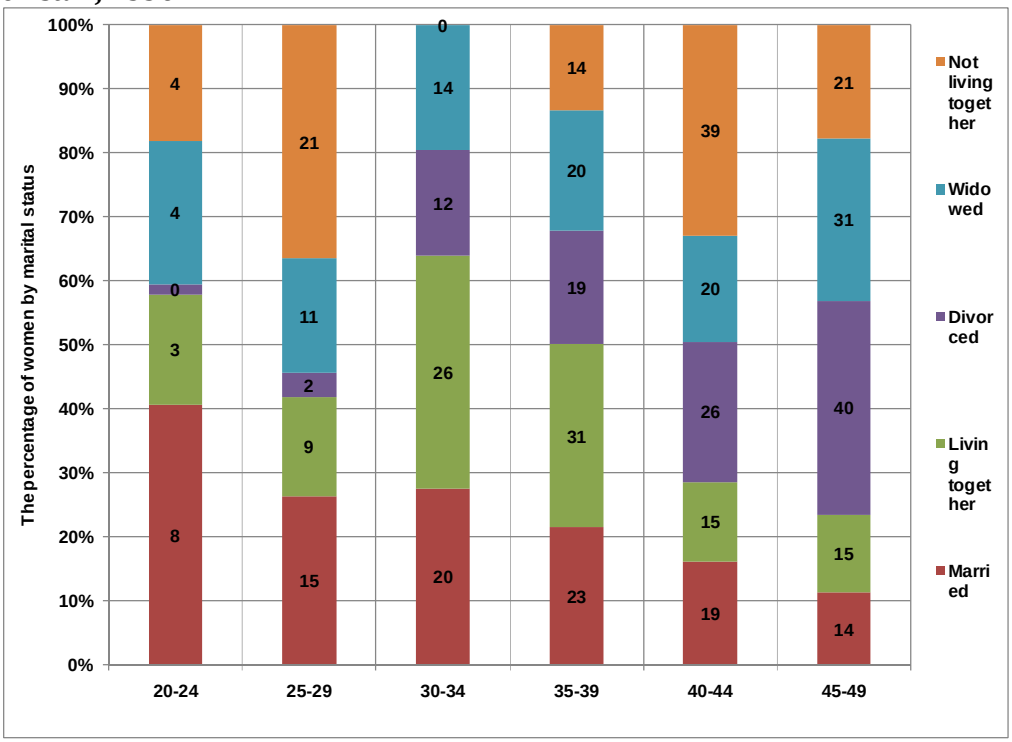
Source: http://mansurovs.com/Umid/Main/Uzbekistan/Population/population.html

Annex 5 - The percentage of women by marital status and age structure in Kazakhstan, 1999



Data: KDHS-1999

Annex 6 - The percentage of women by marital status and age structure in Uzbekistan, 1996



Data: UZDHS-1996

Annex II

Methodological annex

All calculations related to Section II of the Dissertation based on data of Demographic and Health surveys were done using SAS program. The following procedures will have the same structure as in Section II of the Dissertation. Firstly, it is necessary to describe the original names of variables and categories from DHS, which is shown in Annex 6. However, some variables and categories were recoded by the author, especially the variable "Ethnicity" being originally coded differently in each country (in Kazakhstan DHS as *1 – Kazakhs, 2 – Russians, 3 – Ukrainians, 4 – Germans, 5 – Koreans, 6 – Others, 7 – Tatars*; in Uzbekistan DHS: *1 – Uzbeks, 2 – Russians, 3 – Kazakhs, 4 – Tadjiks, 5 – Koreans, 13 – Iranians, 14 – Karakalpaks, 15 – Turkmen, 16 – Tatars, 17 – Ukrainians, 96 – others);* in Ukraine DHS this variable is missing, and in the Dissertation it is indicated as *3 – Ukrainians.*

Annex 6 - Description of names of variables and categories used

Name	Description	Values
Country	Country	1=Kazakhstan
		2=Uzbekistan
		3=Ukraine
v131	Ethnicity	1=Kazakhs
		2=Russians
		3=Ukrainians
		4=Uzbeks
		7=Others[1]
v013	Age groups[2]	1=15-19
		2=20-24
		3=25-29
		4=30-34
		5=35-39
		6=40-44
		7=45+
v501	Marital status	0=Never married
		1=Married
		2=Living together
		3=Widowed
		4=Divorced
		5=Not living together
v106	Education	0=No education
		1=Primary education
		3=Secondary education
		4=Higher education
v025	Place of residence	1=Urban
		2=Rural
BORD	Live birth order	1=First order
		2=Second order
		3=Third order
		4=Fourth and more

Note: [1]Structure of ethnic groups "7 – Others" is country specific. Others in Kazakhstan are Germans, Koreans, Tatars and others, in Uzbekistan are Tadjiks, Koreans, Iranians, Karakalpaks, Turkmen, Tatars;
[2]Units of age will be considered as well for calculation of mean age at childbearing.

Following SAS procedures showed a way of recoding values of variable Ethnicity in:

Kazakhstan DHS:

```
data data sau4.Kkbr41fl;
set sau4.Kkbr41fl;
if ethnicity=1 then Eth=1;
if ethnicity=2 then Eth=2;
if ethnicity=3 then Eth=3;
if ethnicity ge 4 then Eth=5;
run;
```

Uzbekistan DHS:

```
data data sau4.Uzkr31fl;
set sau3.Uzkr31fl;
if Ethnicity=1 then Eth=4;
if Ethnicity=2 then Eth=2;
if Ethnicity=3 then Eth=1;
if Ethnicity=17 then Eth=3;
if Ethnicity=4 then Eth=9;
if Ethnicity=5 then Eth=9;
if Ethnicity=13 then Eth=9;
if Ethnicity=14 then Eth=9;
if Ethnicity=15 then Eth=9;
if Ethnicity=16 then Eth=9;
if Ethnicity=96 then Eth=9;
if Ethnicity ge 97 then Eth=9;
run;
```

Therefore, from the original dataset *(Kkbr41fl.sas7bdat, uzbr31fl. sas7bdat, Uabr51fl. sas7bdat)* the new aggregated data files (*D_Kz.sas7bdat* for Kazakhstan, *D_Uz.sas7bdat* and *D_Uk.sas7bdat*) were created using procedure *FREQ*. These data files in Excel format *Data4_1.xls* (Excel sheets “Kazakhstan”, “Uzbekistan” and “Ukraine”) were produced using SAS procedure *EXPORT*, which are introduced below:

From Kazakhstan DHS:

```
proc freq data=sau4.Kkbr41fl;
tables
age*ethnicity*marital_status*place_of_residence*education*birth_order
/nopercent norow nocol out=sau4.D_Kz;
run;
PROC EXPORT DATA= sau4.D_Kz
            OUTFILE= "C:\DHS\Data4_1.xls"
            DBMS=EXCEL REPLACE;
     SHEET="Kazakhstan";
RUN;
```

From Uzbekistan DHS:

```
proc freq data=sau4.uzbr31fl;
tables age*ethnicity*marital_status*place of
residence*education*birth order /nopercent norow nocol out=sau4.D_Uz;
run;
PROC EXPORT DATA= sau4.D_Uz
            OUTFILE= "C:\DHS\Data4_1.xls"
```

```
            DBMS=EXCEL REPLACE;
     SHEET="Uzbekistan";
RUN;
```

From Ukraine DHS:

```
proc freq data=sau4.Uabr51fl;
tables age*marital_status*place_of_residence*education*birth_order
/nopercent norow nocol out=sau5.D_Uk;
run;
PROC EXPORT DATA= sau4.D_Uk
            OUTFILE= "C:\DHS\Data4_1.xls"
            DBMS=EXCEL REPLACE;
     SHEET="Ukraine";
RUN;
```

Thus, Data4_1.xls file with 3 sheets (“Kazakhstan”, “Uzbekistan”, “Ukraine”) have been created. Then, in each considered sheet was added variable “Country” and values are coded as shown in previous Annex … . Therefore, data from the sheets were put in one Excel sheet called “ALL” in the considered file and were produced using SAS procedure *IMPORT*, which is:

```
PROC IMPORT OUT= sau4.Data4_1
            DATAFILE= "c:\DHS\Data4_1.xls"
            DBMS=EXCEL REPLACE;
     RANGE="All$";
     GETNAMES=YES;
     MIXED=NO;
     SCANTEXT=YES;
     USEDATE=YES;
     SCANTIME=YES;
RUN;
```

Average birth order per woman was calculated by MEANS procedure in SAS. Average birth order per woman was calculated for each country, place of residence, ethnicity, marital status, and mother’s educational level apart which are following:

by country:

```
ods html; title 'Country apart';
proc means data=sau4.data4_1 n mean;
by country; weight count;
var birth_order;
run;
```

by place of residence:

```
ods html; title 'Place of Residence';
proc means data=sau4.data4_1 n mean;
by country Place_of_Residence; weight count;
var birth_order;
run;
```

by ethnicity:

```
ods html; title 'Ethnicity';
proc means data=sau4.data4_1 n mean;
by country Ethnicity; weight count;
var birth_order;
run;
```

and by marital status and ethnicity combined for each country apart:

```
ods html; Title 'Marital status';
proc means data=sau4.data4_1 n mean;
by country marital_status ethnicity; weight count;
var birth_order;
run;
```

by mother's education:

```
ods html; Title 'Education';
proc means data=sau4.data4_1 n mean;
by country educational_attanment; weight count;
var birth_order;
run;
```

As well as average birth order per woman, mean age of mothers was calculated using MEANS procedure in SAS. In each individual country Ethnicity (in Ukraine – no ethnicity) and Marital status were selected:

by country:

```
ods html; title 'Country apart';
proc means data=sau4.data4_1 n mean;
by country; weight count;
var Age;
run;
```

by place of residence:

```
ods html; title 'Place of Residence';
proc means data=sau4.data4_1 n mean;
by country Place_of_Residence; weight count;
var Age;
run;
```

by ethnicity:

```
ods html; title 'Ethnicity';
proc means data=sau4.data4_1 n mean;
by country Ethnicity; weight count;
var Age;
run;
```

and by marital status and ethnicity combined for each country apart:

```
ods html; Title 'Marital status';
proc means data=sau4.data4_1 n mean;
```

```
by country marital_status ethnicity; weight count;
var Age;
run;
```

by mother's education:

```
ods html; Title 'Education';
proc means data=sau4.data4_1 n mean;
by country educational_attanment; weight count;
var Age;
run;
```

MODELING

In order to choose the best way of modeling cumulative (CLOGIT) and generalized (GLOGIT) logistic functions were chosen, which can specify categorical variables as explanatory ones or continuous variables as explanatory variables. LOGIT is the log odds function. PROC LOGISTIC fits the binary logit model when there are two response categories and fits the cumulative logit model when there are more than two response categories. GLOGIT is the generalized logit function. PROC LOGISTIC fits the generalized logit model where each nonreference category is contrasted with the reference category. The response variable option is REF= which specify the reference category. (in program SAS 9.2 Help and Documentation)

```
ods html; title 'Cumulated logit model';
proc logistic data=sau4.Data4_2 descending;
class Ethnicity (ref='Russians') Marital_status (ref='Married')
Place_of_residence (ref='Urban') Education (ref='Higher') country
(ref='Kazakhstan') Age (ref='20-24') /param=ref;
model birth_order = Ethnicity Marital_status Place_of_residence
Education Country Age / link=CLOGIT clparm=both expb rsquare ctable;
weight count;
run; (see Annex 7 p.147-151)
```

Annex 7 – The output of multinomial cumulated logistic regression model

Cumulated logit model 16:36 Sunday, November 7, 2010 23

The LOGISTIC Procedure

Model Information

Data Set	SAU4.DATA4_2	
Response Variable	BORD	BORD
Number of Response Levels	4	
Weight Variable	COUNT	COUNT
Model	cumulative logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	1810
Number of Observations Used	1810
Sum of Weights Read	25763
Sum of Weights Used	25763

Response Profile

Ordered Value	BORD	Total Frequency	Total Weight
1	4	225	3778.000
2	3	362	3398.000
3	2	520	7394.000
4	1	703	11193.000

Probabilities modeled are cumulated over the lower Ordered Values.

Class Level Information

Class	Value	Design Variables				
v131	1	1	0	0	0	
	2	0	0	0	0	
	3	0	1	0	0	
	4	0	0	1	0	
	7	0	0	0	1	
V501	0	1	0	0	0	0
	1	0	0	0	0	0
	2	0	1	0	0	0
	3	0	0	1	0	0
	4	0	0	0	1	0
	5	0	0	0	0	1
V025	1	0				
	2	1				
V106	0	1	0	0		
	1	0	1	0		
	2	0	0	1		

Cumulated logit model 16:36 Sunday, November 7, 2010 24

The LOGISTIC Procedure

Class Level Information

Class	Value	Design Variables				
	3	0	0	0		
Country	1	0	0			
	2	1	0			
	3	0	1			
V013	1	1	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	1	0	0	0	0
	4	0	0	1	0	0	0
	5	0	0	0	1	0	0
	6	0	0	0	0	1	0
	7	0	0	0	0	0	1

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Score Test for the Proportional Odds Assumption

Chi-Square	**DF**	**Pr > ChiSq**
1188.5897	**42**	**<.0001**

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	65400.133	58951.808
SC	65416.636	59083.834
-2 Log L	65394.133	58903.808

R-Square 0.9723 Max-rescaled R-Square 0.9723

Cumulated logit model 16:36 Sunday, November 7, 2010 25

The LOGISTIC Procedure

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	6490.3254	21	<.0001
Score	5554.5869	21	<.0001
Wald	5468.1292	21	<.0001

Type 3 Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
v131	4	406.6617	<.0001
V501	5	150.0690	<.0001
V025	1	378.1828	<.0001
V106	3	218.3043	<.0001
Country	2	142.6319	<.0001
V013	6	2135.2855	<.0001

Analysis of Maximum Likelihood Estimates

Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Exp(Est)
Intercept	4	1	-4.9805	0.0824	3654.4356	<.0001	0.007
Intercept	3	1	-4.0170	0.0806	2481.6074	<.0001	0.018
Intercept	2	1	-2.5521	0.0782	1066.1710	<.0001	0.078
v131	1	1	0.9491	0.0484	384.5026	<.0001	2.583
v131	3	1	0.2454	0.1145	4.5958	0.0321	1.278
v131	4	1	0.8038	0.0643	156.2443	<.0001	2.234
v131	7	1	0.6808	0.0627	118.0238	<.0001	1.975
V501	0	1	-2.0138	0.2919	47.5971	<.0001	0.133
V501	2	1	-0.2208	0.0913	5.8460	0.0156	0.802
V501	3	1	-0.0820	0.0578	2.0158	0.1557	0.921
V501	4	1	-0.5204	0.0525	98.2853	<.0001	0.594
V501	5	1	-0.2615	0.1144	5.2277	0.0222	0.770
V025	2	1	0.4883	0.0251	378.1828	<.0001	1.630
V106	0	1	0.5317	0.2757	3.7185	0.0538	1.702
V106	1	1	1.0528	0.2315	20.6863	<.0001	2.866
V106	2	1	0.4513	0.0313	208.3420	<.0001	1.570
Country	2	1	0.5751	0.0512	126.2575	<.0001	1.777
Country	3	1	-0.4110	0.1102	13.9139	0.0002	0.663
V013	1	1	-1.2694	0.3057	17.2375	<.0001	0.281
V013	3	1	0.9585	0.0695	190.1852	<.0001	2.608
V013	4	1	1.5587	0.0666	547.7297	<.0001	4.753
V013	5	1	1.9410	0.0656	876.0348	<.0001	6.966
V013	6	1	2.1837	0.0662	1088.5712	<.0001	8.879
V013	7	1	2.3494	0.0672	1220.5965	<.0001	10.480

Cumulated logit model 16:36 Sunday, November 7, 2010 26

The LOGISTIC Procedure

Odds Ratio Estimates

Effect		Point Estimate	95% Wald Confidence Limits	
v131	1 vs 2	2.583	2.350	2.840
v131	3 vs 2	1.278	1.021	1.600
v131	4 vs 2	2.234	1.969	2.534
v131	7 vs 2	1.975	1.747	2.234
V501	0 vs 1	0.133	0.075	0.237
V501	2 vs 1	0.802	0.670	0.959
V501	3 vs 1	0.921	0.823	1.032
V501	4 vs 1	0.594	0.536	0.659
V501	5 vs 1	0.770	0.615	0.963
V025	2 vs 1	1.630	1.551	1.712
V106	0 vs 3	1.702	0.991	2.922
V106	1 vs 3	2.866	1.820	4.511
V106	2 vs 3	1.570	1.477	1.670
Country	2 vs 1	1.777	1.608	1.965
Country	3 vs 1	0.663	0.534	0.823
V013	1 vs 2	0.281	0.154	0.512
V013	3 vs 2	2.608	2.276	2.988
V013	4 vs 2	4.753	4.171	5.416
V013	5 vs 2	6.966	6.126	7.921
V013	6 vs 2	8.879	7.799	10.109
V013	7 vs 2	10.480	9.186	11.956

Association of Predicted Probabilities and Observed Responses

Percent Concordant	62.3	Somers' D	0.251
Percent Discordant	37.2	Gamma	0.252
Percent Tied	0.4	Tau-a	0.179
Pairs	1164911	c	0.626

Profile Likelihood Confidence Interval for Parameters

Parameter		Estimate	95% Confidence Limits	
Intercept	4	-4.9805	-5.1401	-4.8225
Intercept	3	-4.0170	-4.1725	-3.8631
Intercept	2	-2.5521	-2.7026	-2.4030
v131	1	0.9491	0.8553	1.0432
v131	3	0.2454	0.0227	0.4660
v131	4	0.8038	0.6776	0.9303
v131	7	0.6808	0.5581	0.8036
V501	0	-2.0138	-2.6276	-1.4775
V501	2	-0.2208	-0.4018	-0.0424
V501	3	-0.0820	-0.1963	0.0318
V501	4	-0.5204	-0.6227	-0.4190

Cumulated logit model 16:36 Sunday, November 7, 2010 27

The LOGISTIC Procedure

Profile Likelihood Confidence Interval for Parameters

Parameter		Estimate	95% Confidence Limits	
V501	5	-0.2615	-0.4895	-0.0383
V025	2	0.4883	0.4390	0.5376
V106	0	0.5317	-0.0365	1.0949
V106	1	1.0528	0.5825	1.5226
V106	2	0.4513	0.3909	0.5119
Country	2	0.5751	0.4732	0.6769
Country	3	-0.4110	-0.6234	-0.1963
V013	1	-1.2694	-1.9089	-0.7119
V013	3	0.9585	0.8265	1.0917
V013	4	1.5587	1.4321	1.6869
V013	5	1.9410	1.8162	2.0675
V013	6	2.1837	2.0574	2.3115
V013	7	2.3494	2.2209	2.4795

Wald Confidence Interval for Parameters

Parameter		Estimate	95% Confidence Limits	
Intercept	4	-4.9805	-5.1420	-4.8190
Intercept	3	-4.0170	-4.1751	-3.8590
Intercept	2	-2.5521	-2.7052	-2.3989
v131	1	0.9491	0.8542	1.0440
v131	3	0.2454	0.0210	0.4697
v131	4	0.8038	0.6778	0.9298
v131	7	0.6808	0.5580	0.8036
V501	0	-2.0138	-2.5859	-1.4417
V501	2	-0.2208	-0.3998	-0.0418
V501	3	-0.0820	-0.1952	0.0312
V501	4	-0.5204	-0.6233	-0.4176
V501	5	-0.2615	-0.4856	-0.0373
V025	2	0.4883	0.4391	0.5375
V106	0	0.5317	-0.00872	1.0721
V106	1	1.0528	0.5991	1.5064
V106	2	0.4513	0.3901	0.5126
Country	2	0.5751	0.4748	0.6754
Country	3	-0.4110	-0.6270	-0.1951
V013	1	-1.2694	-1.8686	-0.6701
V013	3	0.9585	0.8223	1.0947
V013	4	1.5587	1.4282	1.6893
V013	5	1.9410	1.8125	2.0695
V013	6	2.1837	2.0539	2.3134
V013	7	2.3494	2.2176	2.4812

Using cumulated LOGIT function was not appropriate due to the rejection of Beta hypothesis (see Annex 2), but generalized one showed acceptance, moreover, it gave more detailed information for each category of dependent variable which is seen in *Analysis of Maximum likelihood estimation* and *Odds Ratio* of the results of multinomial generalized logistic regression by SAS program (see Annex 3).

Model I:

The principle of Model I is: **logit of (live birth order)=b_0 + b1*ethnicity + b_2*marital status + b_3*place of residence + b_4*educational attainment + b_5*country + b_6*age group** (Tables 8-12). The impact of each classification variable is estimated and controlled for age; countries are included in the model as explanatory variables. Data for Model I is slightly distinguished from Model II due to category "Others" of variable "Ethnicity". Other ethnic groups of Kazakhstan and other ethnic group of Uzbekistan were cumulated in one category "Others" by following procedure and then procedure LOGISTIC were made:

```
ods html; title 'Generalized logit - Model_I';
proc logistic data=sau4.Data4_2* descending;
class Ethnicity (ref='Russians') Marital_status (ref='Married')
Place_of_residence (ref='Urban') Education (ref='3') country
(ref='1') v013 (ref='2') /param=ref;
model bord (ref='2')= v131 v501 v025 v106 country v013 / link=glogit
clparm=both expb rsquare ctable; weight count;
run; (see Annex 8 p.153-161)
```

Annex 8 – The output of multinomial generalized logistic regression model (Model I)

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 1

The LOGISTIC Procedure

Model Information

Data Set	SAU4.DATA4_2	
Response Variable	BORD	BORD
Number of Response Levels	4	
Weight Variable	COUNT	COUNT
Model	generalized logit	
Optimization Technique	Newton-Raphson	

Number of Observations Read	1810
Number of Observations Used	1810
Sum of Weights Read	25763
Sum of Weights Used	25763

Response Profile

Ordered Value	BORD	Total Frequency	Total Weight
1	4	225	3778.000
2	3	362	3398.000
3	2	520	7394.000
4	1	703	11193.000

Logits modeled use BORD=2 as the reference category.

Class Level Information

Class	Value	Design Variables				
v131	1	1	0	0	0	
	2	0	0	0	0	
	3	0	1	0	0	
	4	0	0	1	0	
	7	0	0	0	1	
V501	0	1	0	0	0	0
	1	0	0	0	0	0
	2	0	1	0	0	0
	3	0	0	1	0	0
	4	0	0	0	1	0
	5	0	0	0	0	1
V025	1	0				
	2	1				
V106	0	1	0	0		
	1	0	1	0		
	2	0	0	1		

The LOGISTIC Procedure

Class Level Information

Class	Value	Design Variables					
	3	0	0	0			
Country	1	0	0				
	2	1	0				
	3	0	1				
V013	1	1	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	1	0	0	0	0
	4	0	0	1	0	0	0
	5	0	0	0	1	0	0
	6	0	0	0	0	1	0
	7	0	0	0	0	0	1

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	65400.133	57806.795
SC	65416.636	58169.866
-2 Log L	65394.133	57674.795

R-Square 0.9859 Max-rescaled R-Square 0.9859

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	7719.3386	63	<.0001
Score	6417.7759	63	<.0001
Wald	4765.1236	63	<.0001

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 3

The LOGISTIC Procedure

Type 3 Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq

v131	12	426.0232	<.0001
V501	15	173.0308	<.0001
V025	3	387.5909	<.0001
V106	9	283.3976	<.0001
Country	6	203.6723	<.0001
V013	18	1728.6163	<.0001

Analysis of Maximum Likelihood Estimates

Parameter	BORD	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Exp(Est)
Intercept	4	1	-7.6082	0.4690	263.1338	<.0001	0.000
Intercept	3	1	-3.3021	0.1818	330.0211	<.0001	0.037
Intercept	1	1	1.4287	0.0825	299.9939	<.0001	4.173
v131	1	4	1	1.7641	0.1150	235.4917	<.0001	5.836
v131	1	3	1	0.8016	0.0880	83.0109	<.0001	2.229
v131	1	1	1	-0.2117	0.0583	13.1642	0.0003	0.809
v131	3	4	1	0.6649	0.2440	7.4282	0.0064	1.944
v131	3	3	1	0.1401	0.2078	0.4546	0.5002	1.150
v131	3	1	1	-0.0900	0.1362	0.4364	0.5089	0.914
v131	4	4	1	1.3800	0.1332	107.3098	<.0001	3.975
v131	4	3	1	0.7881	0.1162	46.0276	<.0001	2.199
v131	4	1	1	-0.2242	0.0837	7.1731	0.0074	0.799
v131	7	4	1	1.3565	0.1333	103.5879	<.0001	3.883
v131	7	3	1	0.6795	0.1116	37.0749	<.0001	1.973
v131	7	1	1	-0.1372	0.0793	2.9919	0.0837	0.872
V501	0	4	1	-0.6656	1.0623	0.3926	0.5309	0.514
V501	0	3	1	0.000532	0.6628	0.0000	0.9994	1.001
V501	0	1	1	2.0146	0.3301	37.2553	<.0001	7.498
V501	2	4	1	0.2897	0.2042	2.0115	0.1561	1.336
V501	2	3	1	0.1852	0.1746	1.1253	0.2888	1.203
V501	2	1	1	0.3241	0.1071	9.1533	0.0025	1.383
V501	3	4	1	-0.0356	0.1036	0.1180	0.7312	0.965
V501	3	3	1	0.0558	0.1020	0.2990	0.5845	1.057
V501	3	1	1	0.0631	0.0756	0.6967	0.4039	1.065
V501	4	4	1	-0.5571	0.1339	17.3131	<.0001	0.573
V501	4	3	1	-0.2061	0.1050	3.8494	0.0498	0.814
V501	4	1	1	0.3996	0.0590	45.8172	<.0001	1.491
V501	5	4	1	0.7477	0.2430	9.4674	0.0021	2.112
V501	5	3	1	0.0958	0.2375	0.1629	0.6865	1.101
V501	5	1	1	0.4770	0.1351	12.4741	0.0004	1.611
V025	2	4	1	0.6623	0.0464	203.3461	<.0001	1.939
V025	2	3	1	0.2721	0.0442	37.8906	<.0001	1.313
V025	2	1	1	-0.2087	0.0321	42.1758	<.0001	0.812
V106	0	4	1	1.2767	0.4543	7.8966	0.0050	3.585

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 4

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

Parameter	BORD	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Exp(Est)
V106	0	3	0.4903	0.5134	0.9121	0.3396	1.633
V106	0	1	0.2165	0.4261	0.2581	0.6114	1.242
V106	1	4	1.6328	0.3800	18.4589	<.0001	5.118
V106	1	3	0.5993	0.4148	2.0870	0.1486	1.821
V106	1	1	-0.3082	0.3437	0.8038	0.3700	0.735
V106	2	4	0.9059	0.0712	161.8191	<.0001	2.474
V106	2	3	0.3282	0.0579	32.0921	<.0001	1.388
V106	2	1	-0.1780	0.0368	23.3961	<.0001	0.837
Country2	4	1	0.9760	0.0876	124.1590	<.0001	2.654
Country2	3	1	0.2063	0.0899	5.2658	0.0217	1.229
Country2	1	1	-0.0958	0.0704	1.8480	0.1740	0.909
Country3	4	1	-0.8820	0.2329	14.3391	0.0002	0.414
Country3	3	1	-0.4194	0.2005	4.3745	0.0365	0.657
Country3	1	1	0.2400	0.1315	3.3303	0.0680	1.271
V013	1	4	-6.3230	58.9776	0.0115	0.9146	0.002
V013	1	3	-0.4148	1.0529	0.1552	0.6936	0.660
V013	1	1	1.2273	0.3104	15.6302	<.0001	3.412
V013	3	4	2.4850	0.4602	29.1571	<.0001	12.001
V013	3	3	1.2495	0.1664	56.3683	<.0001	3.489
V013	3	1	-0.5094	0.0722	49.7692	<.0001	0.601
V013	4	4	3.6186	0.4539	63.5661	<.0001	37.286
V013	4	3	1.5461	0.1623	90.7287	<.0001	4.693
V013	4	1	-0.7858	0.0699	126.3343	<.0001	0.456
V013	5	4	4.2493	0.4527	88.0928	<.0001	70.060
V013	5	3	1.6745	0.1613	107.7965	<.0001	5.336
V013	5	1	-0.9036	0.0691	171.0718	<.0001	0.405
V013	6	4	4.6307	0.4529	104.5611	<.0001	102.584
V013	6	3	1.7415	0.1622	115.2240	<.0001	5.706
V013	6	1	-0.9758	0.0704	191.9554	<.0001	0.377
V013	7	4	4.9164	0.4534	117.5832	<.0001	136.505
V013	7	3	1.8190	0.1640	123.0752	<.0001	6.166
V013	7	1	-1.0381	0.0720	208.1483	<.0001	0.354

Odds Ratio Estimates

Effect		BORD	Point Estimate	95% Wald Confidence Limits	
v131	1 vs 2	4	5.836	4.659	7.311
v131	1 vs 2	3	2.229	1.876	2.649
v131	1 vs 2	1	0.809	0.722	0.907
v131	3 vs 2	4	1.944	1.205	3.136
v131	3 vs 2	3	1.150	0.766	1.729
v131	3 vs 2	1	0.914	0.700	1.194
v131	4 vs 2	4	3.975	3.062	5.161
v131	4 vs 2	3	2.199	1.751	2.761

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 5

The LOGISTIC Procedure

Odds Ratio Estimates

Effect		BORD	Point Estimate	95% Wald Confidence Limits	
v131	4 vs 2	1	0.799	0.678	0.942
v131	7 vs 2	4	3.883	2.990	5.042
v131	7 vs 2	3	1.973	1.585	2.455
v131	7 vs 2	1	0.872	0.746	1.018
V501	0 vs 1	4	0.514	0.064	4.123
V501	0 vs 1	3	1.001	0.273	3.668
V501	0 vs 1	1	7.498	3.926	14.319
V501	2 vs 1	4	1.336	0.895	1.994
V501	2 vs 1	3	1.203	0.855	1.694
V501	2 vs 1	1	1.383	1.121	1.706
V501	3 vs 1	4	0.965	0.788	1.182
V501	3 vs 1	3	1.057	0.866	1.291
V501	3 vs 1	1	1.065	0.918	1.235
V501	4 vs 1	4	0.573	0.441	0.745
V501	4 vs 1	3	0.814	0.662	1.000
V501	4 vs 1	1	1.491	1.328	1.674
V501	5 vs 1	4	2.112	1.312	3.401
V501	5 vs 1	3	1.101	0.691	1.753
V501	5 vs 1	1	1.611	1.237	2.099
V025	2 vs 1	4	1.939	1.770	2.124
V025	2 vs 1	3	1.313	1.204	1.431
V025	2 vs 1	1	0.812	0.762	0.864
V106	0 vs 3	4	3.585	1.471	8.734
V106	0 vs 3	3	1.633	0.597	4.466
V106	0 vs 3	1	1.242	0.539	2.862
V106	1 vs 3	4	5.118	2.430	10.780
V106	1 vs 3	3	1.821	0.808	4.105
V106	1 vs 3	1	0.735	0.375	1.441
V106	2 vs 3	4	2.474	2.152	2.845
V106	2 vs 3	3	1.388	1.239	1.555
V106	2 vs 3	1	0.837	0.779	0.900
Country	2 vs 1	4	2.654	2.235	3.151
Country	2 vs 1	3	1.229	1.031	1.466
Country	2 vs 1	1	0.909	0.792	1.043
Country	3 vs 1	4	0.414	0.262	0.653
Country	3 vs 1	3	0.657	0.444	0.974
Country	3 vs 1	1	1.271	0.982	1.645
V013	1 vs 2	4	0.002	<0.001	>999.999
V013	1 vs 2	3	0.660	0.084	5.201
V013	1 vs 2	1	3.412	1.857	6.270
V013	3 vs 2	4	12.001	4.870	29.576
V013	3 vs 2	3	3.489	2.518	4.834
V013	3 vs 2	1	0.601	0.522	0.692
V013	4 vs 2	4	37.286	15.319	90.758
V013	4 vs 2	3	4.693	3.414	6.451
V013	4 vs 2	1	0.456	0.397	0.523
V013	5 vs 2	4	70.060	28.846	170.155

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 6

The LOGISTIC Procedure

Odds Ratio Estimates

Effect		BORD	Point Estimate	95% Wald Confidence Limits	
V013	5 vs 2	3	5.336	3.890	7.320
V013	5 vs 2	1	0.405	0.354	0.464
V013	6 vs 2	4	102.584	42.229	249.203
V013	6 vs 2	3	5.706	4.152	7.842
V013	6 vs 2	1	0.377	0.328	0.433
V013	7 vs 2	4	136.505	56.134	331.951
V013	7 vs 2	3	6.166	4.471	8.503
V013	7 vs 2	1	0.354	0.308	0.408

Profile Likelihood Confidence Interval for Parameters

Parameter		BORD	Estimate	95% Confidence Limits	
Intercept		4	-7.6082	-8.6658	-6.7889
Intercept		3	-3.3021	-3.6681	-2.9544
Intercept		1	1.4287	1.2678	1.5912
v131	1	4	1.7641	1.5428	1.9939
v131	1	3	0.8016	0.6305	0.9756
v131	1	1	-0.2117	-0.3261	-0.0974
v131	3	4	0.6649	0.1722	1.1317
v131	3	3	0.1401	-0.2782	0.5385
v131	3	1	-0.0900	-0.3559	0.1787
v131	4	4	1.3800	1.1220	1.6445
v131	4	3	0.7881	0.5617	1.0172
v131	4	1	-0.2242	-0.3886	-0.0604
v131	7	4	1.3565	1.0980	1.6209
v131	7	3	0.6795	0.4612	0.8988
v131	7	1	-0.1372	-0.2926	0.0184
V501	0	4	-0.6656	-3.5887	1.0262
V501	0	3	0.000532	-1.5012	1.1954
V501	0	1	2.0146	1.4198	2.7275
V501	2	4	0.2897	-0.1237	0.6791
V501	2	3	0.1852	-0.1661	0.5198
V501	2	1	0.3241	0.1164	0.5366
V501	3	4	-0.0356	-0.2398	0.1663
V501	3	3	0.0558	-0.1461	0.2540
V501	3	1	0.0631	-0.0847	0.2118
V501	4	4	-0.5571	-0.8257	-0.3003
V501	4	3	-0.2061	-0.4153	-0.00328
V501	4	1	0.3996	0.2845	0.5160
V501	5	4	0.7477	0.2538	1.2102
V501	5	3	0.0958	-0.3897	0.5454
V501	5	1	0.4770	0.2167	0.7469
V025	2	4	0.6623	0.5714	0.7535
V025	2	3	0.2721	0.1855	0.3588
V025	2	1	-0.2087	-0.2717	-0.1457

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 7

The LOGISTIC Procedure

Profile Likelihood Confidence Interval for Parameters

Parameter		BORD	Estimate	95% Confidence Limits	
V106	0	4	1.2767	0.4006	2.2027
V106	0	3	0.4903	-0.5552	1.4961
V106	0	1	0.2165	-0.6004	1.0925
V106	1	4	1.6328	0.8909	2.3893
V106	1	3	0.5993	-0.2466	1.3991
V106	1	1	-0.3082	-0.9808	0.3780
V106	2	4	0.9059	0.7675	1.0468
V106	2	3	0.3282	0.2151	0.4423
V106	2	1	-0.1780	-0.2502	-0.1059
Country	2	4	0.9760	0.8045	1.1479
Country	2	3	0.2063	0.0295	0.3820
Country	2	1	-0.0958	-0.2336	0.0425
Country	3	4	-0.8820	-1.3251	-0.4088
Country	3	3	-0.4194	-0.8027	-0.0143
Country	3	1	0.2400	-0.0196	0.4967
V013	1	4	-6.3230	.	2.7555
V013	1	3	-0.4148	-3.3288	1.2460
V013	1	1	1.2273	0.6595	1.8871
V013	3	4	2.4850	1.6866	3.5293
V013	3	3	1.2495	0.9328	1.5866
V013	3	1	-0.5094	-0.6516	-0.3685
V013	4	4	3.6186	2.8364	4.6538
V013	4	3	1.5461	1.2381	1.8758
V013	4	1	-0.7858	-0.9236	-0.6495
V013	5	4	4.2493	3.4700	5.2829
V013	5	3	1.6745	1.3687	2.0023
V013	5	1	-0.9036	-1.0399	-0.7690
V013	6	4	4.6307	3.8511	5.6644
V013	6	3	1.7415	1.4336	2.0710
V013	6	1	-0.9758	-1.1147	-0.8385
V013	7	4	4.9164	4.1354	5.9509
V013	7	3	1.8190	1.5076	2.1517
V013	7	1	-1.0381	-1.1799	-0.8978

Wald Confidence Interval for Parameters

Parameter		BORD	Estimate	95% Confidence Limits	
Intercept		4	-7.6082	-8.5275	-6.6890
Intercept		3	-3.3021	-3.6583	-2.9458
Intercept		1	1.4287	1.2670	1.5904
v131	1	4	1.7641	1.5388	1.9894
v131	1	3	0.8016	0.6292	0.9741
v131	1	1	-0.2117	-0.3260	-0.0973
v131	3	4	0.6649	0.1868	1.1431
v131	3	3	0.1401	-0.2672	0.5474
v131	3	1	-0.0900	-0.3570	0.1770

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 8

The LOGISTIC Procedure

Wald Confidence Interval for Parameters

Parameter		BORD	Estimate	95% Confidence Limits	
v131	4	4	1.3800	1.1189	1.6411
v131	4	3	0.7881	0.5604	1.0158
v131	4	1	-0.2242	-0.3883	-0.0601
v131	7	4	1.3565	1.0953	1.6178
v131	7	3	0.6795	0.4607	0.8982
v131	7	1	-0.1372	-0.2927	0.0183
V501	0	4	-0.6656	-2.7477	1.4165
V501	0	3	0.000532	-1.2986	1.2997
V501	0	1	2.0146	1.3677	2.6616
V501	2	4	0.2897	-0.1106	0.6900
V501	2	3	0.1852	-0.1570	0.5273
V501	2	1	0.3241	0.1141	0.5340
V501	3	4	-0.0356	-0.2386	0.1674
V501	3	3	0.0558	-0.1442	0.2557
V501	3	1	0.0631	-0.0851	0.2113
V501	4	4	-0.5571	-0.8195	-0.2947
V501	4	3	-0.2061	-0.4119	-0.00021
V501	4	1	0.3996	0.2839	0.5153
V501	5	4	0.7477	0.2714	1.2240
V501	5	3	0.0958	-0.3696	0.5613
V501	5	1	0.4770	0.2123	0.7417
V025	2	4	0.6623	0.5712	0.7533
V025	2	3	0.2721	0.1854	0.3587
V025	2	1	-0.2087	-0.2717	-0.1457
V106	0	4	1.2767	0.3862	2.1672
V106	0	3	0.4903	-0.5159	1.4966
V106	0	1	0.2165	-0.6187	1.0516
V106	1	4	1.6328	0.8879	2.3777
V106	1	3	0.5993	-0.2138	1.4123
V106	1	1	-0.3082	-0.9818	0.3655
V106	2	4	0.9059	0.7663	1.0454
V106	2	3	0.3282	0.2146	0.4417
V106	2	1	-0.1780	-0.2502	-0.1059
Country	2	4	0.9760	0.8043	1.1477
Country	2	3	0.2063	0.0301	0.3825
Country	2	1	-0.0958	-0.2338	0.0423
Country	3	4	-0.8820	-1.3384	-0.4255
Country	3	3	-0.4194	-0.8124	-0.0264
Country	3	1	0.2400	-0.0178	0.4978
V013	1	4	-6.3230	-121.9	109.3
V013	1	3	-0.4148	-2.4784	1.6489
V013	1	1	1.2273	0.6189	1.8357
V013	3	4	2.4850	1.5830	3.3870
V013	3	3	1.2495	0.9233	1.5757
V013	3	1	-0.5094	-0.6509	-0.3679
V013	4	4	3.6186	2.7291	4.5082
V013	4	3	1.5461	1.2280	1.8643
V013	4	1	-0.7858	-0.9228	-0.6488

Generalized logit - Model_I 16:35 Tuesday, November 9, 2010 9

The LOGISTIC Procedure

Wald Confidence Interval for Parameters

Parameter		BORD	Estimate	95% Confidence Limits	
V013	5	4	4.2493	3.3620	5.1367
V013	5	3	1.6745	1.3584	1.9906
V013	5	1	-0.9036	-1.0391	-0.7682
V013	6	4	4.6307	3.7431	5.5183
V013	6	3	1.7415	1.4235	2.0594
V013	6	1	-0.9758	-1.1139	-0.8378
V013	7	4	4.9164	4.0277	5.8050
V013	7	3	1.8190	1.4976	2.1404
V013	7	1	-1.0381	-1.1791	-0.8971

Model II:

As well as Model I, Model II also was done using GLOGIT function and includes ages as a controlled variable, but does not include variable "Country" because each country was considered apart (for Ukraine DHS this procedure were made apart due to one category of variable "Ethnicity"): **logit of (live birth order)=b_0 + b1*ethnicity + b_2*marital status + b_3*place of residence + b_4*educational attainment + b_5*age group** (Table 13-15):

```
ods html; title 'Glogit by country Age Control';
proc logistic data=sau4.Data4_1 descending;
where country ne Ukraine;*
by country;
class ethnicity (ref='Russians') marital_status (ref='married')
place_of_residence (ref='urban') education (ref='higher') age
(ref='20-24') /param=ref ;
model birth_order (ref='2')= ethnicity marital_status
place_of_residence education age / link=glogit clparm=both expb
rsquare ctable; weight count;
run;

ods html; title 'Glogit Ukraine Age Control';
proc logistic data=sau4.Data4_1 descending;
by country; where country=Ukraine;
class marital_status (ref='married') place_of_residence (ref='urban')
education (ref='higher') age (ref='20-24') /param=ref ;
model birth_order (ref='2')= marital_status place_of_residence
education age / link=glogit clparm=both expb rsquare ctable; weight
count;
run;
```

(*Note: These procedures are made for all countries exsluding Ukraine and separate for Ukraine due to variable of ethnicity, which are missing in UKDHS*)

Submodel 1. To study fertility behavior by ethnicity living in all selected countries Submodel 1 was created, where each LOGISTIC procedure was considered separately for each etnicity for all selected country (Table 16-20):

logit of (live birth order)=b_0 + b1 *marital status + b_2*place of residence + b_3*educational attainment + b_4*country + b_5*age group

```
Kazakhs:
ods html; title 'Glogit by country Ethncity=Kazakhs';
proc logistic data=sau4.Data4_1 descending;
by country; where ethnicity=Kazakhs;
class marital_status (ref='Married') place_of_residence (ref='urban')
education (ref='higher') age (ref='20-24') /param=ref ;
model birth_order (ref='2')= marital_status place_of_residence
eduction age / link=glogit clparm=both expb rsquare ctable; weight
count;
run;
```

Submodel 2: To analyze fertility behavior by marital status of each marital status in each indivual country Submodel 2 was created according to the following principle:

logit of (live birth order)=b_0 + b1*ethnicity + b_2*place of residence + b_3*educational attainment + b_4* age group (Table 21-28).

The following procedures are made for those countries which are not Ukraine and which are Ukraine due to missing variable of ethnicity:

```
ods html; title 'Glogit by country Marital status=Married';
proc logistic data=sau4.Data4_1 descending;
by country; where country ne Ukraine marital_status=Married;
class Ethnicity (ref='Russians') Place_of_residence (ref='Urban')
Education (ref='Higher') Age (ref='20-24') /param=ref ;
model birth_order (ref='2')= Ethnicity Place_of_residence Education
Age / link=GLOGIT clparm=both expb rsquare ctable; weight count;
run;

ods html; title 'Glogit Ukraine Marital status=Married';
proc logistic data=sau4.Data4_1 descending;
by country; where country=Ukraine and Marital_status=Married;
class Place_of_residence (ref='Urban') Education (ref='Higher') Age
(ref='20-24') /param=ref ;
model birth_order (ref='2')= Ethnicity Place_of_residence Education
Age / link=GLOGIT clparm=both expb rsquare ctable; weight count;
run;
```

***! NOTE:* In all following Annexes 9-32 red colored numbers are statistically insignificant. Green colored numbers show negative effects. Dependent variable is "live birth order". DATA: KDHS-1999, UZDHS-1999 and UKDHS-2007. Author's calculations used SAS.**

Annex 9 – The results of multinomial logistic regression. Controlled age groups for all countries

Effect	Live birth order	Estimates	P-value	Odds Ratio	95% Wald Confidence Limits	
15-19 vs 20-24	4	-7.3182	0.9398	<0.001	<0.001	>999.999
15-19 vs 20-24	3	-0.4148	0.6936	0.660	0.084	5.201
15-19 vs 20-24	1	1.2272	<.0001	3.412	1.857	6.269
25-29 vs 20-24	4	2.4867	<.0001	12.021	4.878	29.626
25-29 vs 20-24	3	1.2499	<.0001	3.490	2.518	4.836
25-29 vs 20-24	1	-0.5094	<.0001	0.601	0.522	0.692
30-34 vs 20-24	4	3.6171	<.0001	37.229	15.295	90.616
30-34 vs 20-24	3	1.5458	<.0001	4.692	3.413	6.449
30-34 vs 20-24	1	-0.7857	<.0001	0.456	0.397	0.523
35-39 vs 20-24	4	4.2484	<.0001	69.991	28.819	169.986
35-39 vs 20-24	3	1.6741	<.0001	5.334	3.889	7.317
35-39 vs 20-24	1	-0.9035	<.0001	0.405	0.354	0.464
40-44 vs 20-24	4	4.628	<.0001	102.313	42.117	248.540
40-44 vs 20-24	3	1.7409	<.0001	5.703	4.149	7.837
40-44 vs 20-24	1	-0.9757	<.0001	0.377	0.328	0.433
45-49 vs 20-24	4	4.9137	<.0001	136.136	55.982	331.051
45-49 vs 20-24	3	1.8188	<.0001	6.164	4.470	8.501

Annex 10 – The results of multinomial logistic regression. Controlled age groups in Kazakhstan

Effect	Live birth order	Estimates	P-value	Odds Ratio	95% Wald Confidence Limits	
15-19 vs 20-24	4	5.9400	0.9789	379.935	<0.001	>999.999
15-19 vs 20-24	3	9.0015	0.9696	>999.999	<0.001	>999.999
15-19 vs 20-24	1	-2.3664	0.0207	0.094	0.013	0.697
25-29 vs 20-24	4	8.3949	0.9702	>999.999	<0.001	>999.999
25-29 vs 20-24	3	9.8127	0.9668	>999.999	<0.001	>999.999
25-29 vs 20-24	1	-2.8723	0.0048	0.057	0.008	0.417
30-34 vs 20-24	4	9.3592	0.9667	>999.999	<0.001	>999.999
30-34 vs 20-24	3	10.1108	0.9658	>999.999	<0.001	>999.999
30-34 vs 20-24	1	-3.1511	0.0020	0.043	0.006	0.315
35-39 vs 20-24	4	9.9671	0.9646	>999.999	<0.001	>999.999
35-39 vs 20-24	3	10.3144	0.9651	>999.999	<0.001	>999.999
35-39 vs 20-24	1	-3.3098	0.0011	0.037	0.005	0.268
40-44 vs 20-24	4	10.3641	0.9632	>999.999	<0.001	>999.999
40-44 vs 20-24	3	10.3839	0.9649	>999.999	<0.001	>999.999
40-44 vs 20-24	1	-3.3817	0.0009	0.034	0.005	0.250
45-49 vs 20-24	4	10.7750	0.9617	>999.999	<0.001	>999.999
45-49 vs 20-24	3	10.4968	0.9645	>999.999	<0.001	>999.999
45-49 vs 20-24	1	-3.3526	0.0010	0.035	0.005	0.258

Annex 11a – The results of multinomial logistic regression. Controlled age groups in Uzbekistan

Effect	Live birth order	Estimates	P-value	Odds Ratio	95% Wald Confidence Limits	
15-19 vs 20-24	4	7.8292	0.9571	0.940	0.803	1.101
15-19 vs 20-24	3	-0.2514	0.8174	>999.999	<0.001	>999.999
15-19 vs 20-24	1	-7.8292	0.9571	<0.001	<0.001	>999.999
25-29 vs 20-24	4	0.2514	0.8174	1.286	0.152	10.868
25-29 vs 20-24	3	1.3946	0.0006	4.033	1.810	8.986
25-29 vs 20-24	1	2.4066	<.0001	11.097	4.026	30.588
30-34 vs 20-24	4	1.5506	<.0001	4.714	3.057	7.270
30-34 vs 20-24	3	-0.4875	<.0001	0.614	0.504	0.748
30-34 vs 20-24	1	3.7086	<.0001	40.795	15.036	110.680
35-39 vs 20-24	4	1.9332	<.0001	6.912	4.514	10.583
35-39 vs 20-24	3	-0.6246	<.0001	0.535	0.440	0.652
35-39 vs 20-24	1	4.411	<.0001	82.353	30.430	222.871
40-44 vs 20-24	4	2.0664	<.0001	7.897	5.160	12.083
40-44 vs 20-24	3	-0.6738	<.0001	0.510	0.418	0.622
40-44 vs 20-24	1	4.7967	<.0001	121.105	44.687	328.200
45-49 vs 20-24	4	2.0954	<.0001	8.129	5.277	12.522
45-49 vs 20-24	3	-0.6986	<.0001	0.497	0.403	0.614
45-49 vs 20-24	1	5.0359	<.0001	153.836	56.586	418.222

Annex 11b - The results of multinomial logistic regression. Controlled age groups in Ukraine

Effect	Live birth order	Estimates	P-value	Odds Ratio	95% Wald Confidence Limits	
15-19 vs 20-24	4	-0.7145	0.9991	0.489	<0.001	>999.999
15-19 vs 20-24	3	-11.8357	0.9777	<0.001	<0.001	>999.999
15-19 vs 20-24	1	0.0710	0.9004	1.074	0.353	3.265
25-29 vs 20-24	4	11.4119	0.9483	>999.999	<0.001	>999.999
25-29 vs 20-24	3	0.4542	0.3719	1.575	0.581	4.267
25-29 vs 20-24	1	-0.7260	<.0001	0.484	0.346	0.677
30-34 vs 20-24	4	11.6363	0.9473	>999.999	<0.001	>999.999
30-34 vs 20-24	3	0.5719	0.2396	1.772	0.683	4.596
30-34 vs 20-24	1	-1.2151	<.0001	0.297	0.216	0.408
35-39 vs 20-24	4	11.9014	0.9461	>999.999	<0.001	>999.999
35-39 vs 20-24	3	0.6519	0.1766	1.919	0.746	4.940
35-39 vs 20-24	1	-1.3568	<.0001	0.257	0.188	0.353
40-44 vs 20-24	4	12.0187	0.9455	>999.999	<0.001	>999.999
40-44 vs 20-24	3	0.8534	0.0761	2.348	0.914	6.028
40-44 vs 20-24	1	-1.4425	<.0001	0.236	0.172	0.324
45-49 vs 20-24	4	12.3924	0.9438	>999.999	<0.001	>999.999
45-49 vs 20-24	3	1.0389	0.0297	2.826	1.108	7.211
45-49 vs 20-24	1	-1.5538	<.0001	0.211	0.155	0.289

Annex 12 – The results of multinomial logistic regression, Kazakhs

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Never Married vs Married	4	-11.3345	0.9609	<0.001	<0.001	>999.999
Never Married vs Married	3	-11.8088	0.9661	<0.001	<0.001	>999.999
Never Married vs Married	1	1.6165	0.0098	5.036	1.477	17.166
Living together vs Married	4	-1.3401	0.1079	0.262	0.051	1.341
Living together vs Married	3	-0.5214	0.4477	0.594	0.155	2.281
Living together vs Married	1	0.0916	0.8489	1.096	0.427	2.811
Widowed vs Married	4	-0.0755	0.6913	0.927	0.639	1.346
Widowed vs Married	3	-0.1309	0.5275	0.877	0.584	1.317
Widowed vs Married	1	0.0876	0.6184	1.092	0.773	1.541
Divorced vs Married	4	-0.8875	0.0009	0.412	0.244	0.694
Divorced vs Married	3	-0.2640	0.2427	0.768	0.493	1.196
Divorced vs Married	1	0.4926	0.0021	1.637	1.195	2.241
Not living together vs Married	4	-0.8725	0.4156	0.418	0.051	3.415
Not living together vs Married	3	0.4221	0.4393	1.525	0.523	4.446
Not living together vs Married	1	0.7827	0.0591	2.187	0.97	4.93
Place of residence						
Rural vs Urban	4	0.6119	<.0001	1.844	1.546	2.199
Rural vs Urban	3	0.2680	0.0021	1.307	1.102	1.551
Rural vs Urban	1	-0.1183	0.1015	0.888	0.771	1.024
Educational attainment						
No education vs Higher	4	1.1896	0.1697	3.286	0.601	17.948
No education vs Higher	3	-0.3343	0.7865	0.716	0.064	8.042
No education vs Higher	1	-0.2738	0.7864	0.760	0.105	5.513
Primary vs Higher	4	1.4647	0.2191	4.326	0.419	44.721
Primary vs Higher	3	0.5291	0.7118	1.697	0.103	28.106
Primary vs Higher	1	0.5832	0.6283	1.792	0.169	18.993
Secondary vs Higher	4	0.9568	<.0001	2.603	2.000	3.388
Secondary vs Higher	3	0.2864	0.0119	1.332	1.065	1.664
Secondary vs Higher	1	-0.1352	0.1268	0.874	0.734	1.039
Country						
Uzbekistan vs Kazakhstan	4	0.9552	<.0001	2.599	2.023	3.339
Uzbekistan vs Kazakhstan	3	0.2833	0.0381	1.327	1.016	1.735
Uzbekistan vs Kazakhstan	1	-0.1400	0.2475	0.869	0.686	1.102

Annex 13 – The results of multinomial logistic regression, Russians

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Never Married vs Married	4	-11.5663	0.9931	<0.001	<0.001	>999.999
Never Married vs Married	3	-12.4042	0.9903	<0.001	<0.001	>999.999
Never Married vs Married	1	2.1111	0.0431	8.258	1.068	63.857
Living together vs Married	4	-0.0610	0.9134	0.941	0.313	2.827
Living together vs Married	3	0.1475	0.7119	1.159	0.530	2.535
Living together vs Married	1	0.4834	0.0449	1.622	1.011	2.601
Widowed vs Married	4	0.3854	0.3110	1.470	0.698	3.098
Widowed vs Married	3	0.3632	0.2042	1.438	0.821	2.519
Widowed vs Married	1	0.1100	0.5866	1.116	0.751	1.659
Divorced vs Married	4	-0.1174	0.7798	0.889	0.390	2.025
Divorced vs Married	3	-0.0838	0.7569	0.920	0.541	1.563
Divorced vs Married	1	0.3619	0.0125	1.436	1.081	1.908
Not living together vs Married	4	1.2024	0.0056	3.328	1.422	7.787
Not living together vs Married	3	0.1431	0.7473	1.154	0.483	2.756
Not living together vs Married	1	0.3963	0.1267	1.486	0.894	2.472
Place of residence						
Rural vs Urban	4	1.5176	<.0001	4.561	2.893	7.192
Rural vs Urban	3	0.5796	0.0006	1.785	1.280	2.490
Rural vs Urban	1	-0.2445	0.0354	0.783	0.624	0.983
Educational attainment						
No education vs Higher	4	1.9275	0.9995	6.872	<0.001	>999.999
No education vs Higher	3	0.8004	0.9998	2.226	<0.001	>999.999
No education vs Higher	1	14.5786	0.9914	>999.999	<0.001	>999.999
Primary vs Higher	4	-12.7689	0.9942	<0.001	<0.001	>999.999
Primary vs Higher	3	0.3669	0.7557	1.443	0.143	14.553
Primary vs Higher	1	-0.0824	0.9152	0.921	0.202	4.191
Secondary vs Higher	4	0.9912	0.0171	2.695	1.193	6.086
Secondary vs Higher	3	0.4339	0.0555	1.543	0.99	2.406
Secondary vs Higher	1	-0.2217	0.0522	0.801	0.64	1.002
Country						
Uzbekistan vs Kazakhstan	4	0.9340	0.0023	2.545	1.395	4.642
Uzbekistan vs Kazakhstan	3	-0.0354	0.8847	0.965	0.598	1.558
Uzbekistan vs Kazakhstan	1	-0.0302	0.8228	0.970	0.745	1.264

Annex 14 – The results of multinomial logistic regression, Ukrainians

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Never Married vs Married	4	1.4897	0.1871	4.436	0.485	40.562
Never Married vs Married	3	0.3828	0.7328	1.466	0.163	13.199
Never Married vs Married	1	2.3551	<.0001	10.540	3.851	28.847
Living together vs Married	4	0.8752	0.0015	2.399	1.397	4.121
Living together vs Married	3	0.4772	0.0349	1.612	1.034	2.511
Living together vs Married	1	0.3043	0.0267	1.356	1.036	1.774
Widowed vs Married	4	0.3542	0.1500	1.425	0.880	2.308
Widowed vs Married	3	0.2641	0.1479	1.302	0.911	1.862
Widowed vs Married	1	0.0298	0.7882	1.030	0.829	1.280
Divorced vs Married	4	-0.0374	0.8865	0.963	0.577	1.609
Divorced vs Married	3	-0.0393	0.8163	0.961	0.690	1.340
Divorced vs Married	1	0.3619	<.0001	1.436	1.229	1.677
Not living together vs Married	4	1.2606	0.0002	3.528	1.824	6.824
Not living together vs Married	3	-0.1024	0.7930	0.903	0.420	1.940
Not living together vs Married	1	0.4253	0.0191	1.530	1.072	2.184
Place of residence						
Rural vs Urban	4	0.6076	<.0001	1.836	1.352	2.493
Rural vs Urban	3	0.4630	<.0001	1.589	1.301	1.941
Rural vs Urban	1	-0.3445	<.0001	0.709	0.640	0.784
Educational attainment						
No education vs Higher	4	-11.3070	0.9954	<0.001	<0.001	>999.999
No education vs Higher	3	-12.4219	0.9927	<0.001	<0.001	>999.999
No education vs Higher	1	0.3615	0.7556	1.435	0.147	13.988
Primary vs Higher	4	2.7622	0.0013	15.834	2.956	84.810
Primary vs Higher	3	1.9103	0.0021	6.755	2.000	22.817
Primary vs Higher	1	-0.8002	0.1676	0.449	0.144	1.400
Secondary vs Higher	4	1.7122	<.0001	5.541	3.707	8.283
Secondary vs Higher	3	0.5523	<.0001	1.737	1.415	2.133
Secondary vs Higher	1	-0.1788	0.0006	0.836	0.755	0.926

Continuation of Annex 14

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Country						
Uzbekistan vs Kazakhstan	4	-0.3351	0.7642	0.715	0.080	6.387
Uzbekistan vs Kazakhstan	3	0.0265	0.9750	1.027	0.195	5.396
Uzbekistan vs Kazakhstan	1	0.1529	0.7813	1.165	0.396	3.428
Ukraine vs Kazakhstan	4	-0.8778	0.0003	0.416	0.260	0.665
Ukraine vs Kazakhstan	3	-0.4160	0.0462	0.660	0.438	0.993
Ukraine vs Kazakhstan	1	0.2575	0.0602	1.294	0.989	1.692

Annex 15 – The results of multinomial logistic regression, Uzbeks

Submodel 1

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Marital status						
Living together vs Married	4	-1.6625	0.1187	0.190	0.023	1.531
Living together vs Married	3	-1.0975	0.1628	0.334	0.071	1.558
Living together vs Married	1	0.2858	0.5081	1.331	0.571	3.103
Widowed vs Married	4	-0.1087	0.5665	0.897	0.619	1.301
Widowed vs Married	3	-0.0543	0.7994	0.947	0.623	1.440
Widowed vs Married	1	0.0644	0.7472	1.067	0.721	1.578
Divorced vs Married	4	-1.1024	0.0036	0.332	0.158	0.698
Divorced vs Married	3	-0.5035	0.1375	0.604	0.311	1.175
Divorced vs Married	1	0.6033	0.0101	1.828	1.155	2.894
Not living together vs Married	4	0.1883	0.8952	1.207	0.073	19.874
Not living together vs Married	3	0.2657	0.8514	1.304	0.081	21.001
Not living together vs Married	1	0.6306	0.6072	1.879	0.170	20.792
Place of residence						
Rural vs Urban	4	0.5949	<.0001	1.813	1.576	2.086
Rural vs Urban	3	0.1423	0.0532	1.153	0.998	1.332
Rural vs Urban	1	-0.0463	0.4694	0.955	0.842	1.082
Educational attainment						
No education vs Higher	4	0.4255	0.7300	1.530	0.137	17.152
No education vs Higher	3	0.1124	0.9369	1.119	0.069	18.102
No education vs Higher	1	0.6783	0.5814	1.970	0.177	21.966
Primary vs Higher	4	1.5007	0.0172	4.485	1.305	15.412
Primary vs Higher	3	-0.9910	0.3792	0.371	0.041	3.381
Primary vs Higher	1	0.1044	0.8779	1.110	0.293	4.203
Secondary vs Higher	4	0.6709	<.0001	1.956	1.541	2.482
Secondary vs Higher	3	0.1045	0.3590	1.110	0.888	1.388
Secondary vs Higher	1	-0.0264	0.7890	0.974	0.803	1.182

Annex 16 – The results of multinomial logistic regression, Married, Kazakhstan

Effect	Live birth order	Estimates	P-value	Odds ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	1.7487	<.0001	5.747	4.335	7.618
Kazakhs vs Russians	3	0.7856	<.0001	2.194	1.781	2.701
Kazakhs vs Russians	1	-0.2281	0.0012	0.796	0.693	0.914
Ukrainians vs Russians	4	0.6152	0.0386	1.850	1.033	3.314
Ukrainians vs Russians	3	0.1396	0.5639	1.150	0.716	1.847
Ukrainians vs Russians	1	-0.088	0.5792	0.916	0.671	1.250
Other(in KAZ) vs Russians	4	1.1254	<.0001	3.081	2.113	4.494
Other(in KAZ) vs Russians	3	0.6115	<.0001	1.843	1.369	2.481
Other(in KAZ) vs Russians	1	-0.1574	0.1499	0.854	0.690	1.058
Place of residence						
Rural vs Urban	4	0.7971	<.0001	2.219	1.865	2.640
Rural vs Urban	3	0.3688	<.0001	1.446	1.236	1.692
Rural vs Urban	1	-0.1497	0.0165	0.861	0.762	0.973
Educational attainment						
No education vs Higher	4	1.903	0.0017	6.706	2.040	22.045
No education vs Higher	3	0.727	0.2635	2.069	0.579	7.398
No education vs Higher	1	0.06	0.9202	1.062	0.328	3.435
Primary vs Higher	4	1.3888	0.0704	4.010	0.891	18.053
Primary vs Higher	3	0.3992	0.5934	1.491	0.344	6.453
Primary vs Higher	1	0.0566	0.9239	1.058	0.331	3.381
Secondary vs Higher	4	1.0812	<.0001	2.948	2.226	3.906
Secondary vs Higher	3	0.2724	0.0108	1.313	1.065	1.619
Secondary vs Higher	1	-0.1523	0.0447	0.859	0.740	0.996

Annex 17 - The results of multinomial logistic regression, Married. Uzbekistan

Effect	Live birth order	Estimates	p-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	2.0561	<.0001	7.816	4.025	15.177
Kazakhs vs Russians	3	1.1124	0.0001	3.042	1.737	5.327
Kazakhs vs Russians	1	-0.2828	0.1323	0.754	0.521	1.089
Ukrainians vs Russians	4	0.1204	0.9177	1.128	0.115	11.078
Ukrainians vs Russians	3	0.6300	0.4860	1.878	0.319	11.049
Ukrainians vs Russians	1	0.2024	0.7540	1.224	0.345	4.343
Uzbeks vs Russians	4	1.8593	<.0001	6.419	3.448	11.950
Uzbeks vs Russians	3	1.0907	<.0001	2.976	1.802	4.915
Uzbeks vs Russians	1	-0.2636	0.0774	0.768	0.573	1.029
Other(in UZB) vs Russians	4	1.8812	<.0001	6.561	3.458	12.452
Other(in UZB) vs Russians	3	0.9953	0.0002	2.706	1.591	4.601
Other(in UZB) vs Russians	1	-0.2004	0.2325	0.818	0.589	1.137
Place of residence						
Rural vs Urban	4	0.5930	<.0001	1.809	1.592	2.057
Rural vs Urban	3	0.1612	0.0179	1.175	1.028	1.343
Rural vs Urban	1	-0.0507	0.3930	0.951	0.846	1.068
Educational attainment						
No education vs Higher	4	0.5460	0.5185	1.726	0.329	9.056
No education vs Higher	3	0.1969	0.8451	1.218	0.169	8.774
No education vs Higher	1	0.3423	0.7096	1.408	0.232	8.534
Primary vs Higher	4	1.4221	0.0231	4.146	1.216	14.137
Primary vs Higher	3	-0.9452	0.4011	0.389	0.043	3.530
Primary vs Higher	1	0.0752	0.9117	1.078	0.286	4.070
Secondary vs Higher	4	0.5868	<.0001	1.798	1.467	2.204
Secondary vs Higher	3	0.1375	0.1730	1.147	0.942	1.398
Secondary vs Higher	1	-0.0541	0.5241	0.947	0.802	1.119

Annex 18 - The results of multinomial logistic regression. Married. Ukraine

Effect	Live birth order	Estimates	P-value	Odds ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	0.5553	0.0053	1.742	1.179	2.575
Rural vs Urban	3	0.4323	0.0003	1.541	1.216	1.953
Rural vs Urban	1	-0.3373	<.0001	0.714	0.635	0.801
Educational attainment						
No education vs Higher	4	-12.7776	0.9973	<0.001	<0.001	>999.999
No education vs Higher	3	-13.4373	0.9952	<0.001	<0.001	>999.999
No education vs Higher	1	0.0189	0.9878	1.019	0.091	11.359
Primary vs Higher	4	3.1634	0.0004	23.651	4.054	137.967
Primary vs Higher	3	2.1222	0.0031	8.349	2.042	34.136
Primary vs Higher	1	-0.5455	0.4209	0.580	0.154	2.188
Secondary vs Higher	4	1.5345	<.0001	4.639	2.950	7.293
Secondary vs Higher	3	0.5193	<.0001	1.681	1.329	2.126
Secondary vs Higher	1	-0.1423	0.0167	0.867	0.772	0.975

Annex 19 - The results of multinomial logistic regression. Living together. Kazakhstan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	0.4842	0.7553	1.623	0.077	34.096
Kazakhs vs Russians	3	0.5143	0.6445	1.673	0.188	14.863
Kazakhs vs Russians	1	-0.4857	0.5512	0.615	0.125	3.040
Ukrainians vs Russians	4	-0.3381	0.7828	0.713	0.064	7.892
Ukrainians vs Russians	3	-0.0066	0.9949	0.993	0.135	7.334
Ukrainians vs Russians	1	-0.4749	0.5606	0.622	0.126	3.079
Other(in KAZ) vs Russians	4	2.5572	0.0328	12.900	1.232	135.016
Other(in KAZ) vs Russians	3	0.5957	0.5648	1.814	0.239	13.786
Other(in KAZ) vs Russians	1	-0.0910	0.9131	0.913	0.178	4.679
Place of residence						
Rural vs Urban	4	1.4103	0.2208	4.097	0.429	39.174
Rural vs Urban	3	0.7153	0.3711	2.045	0.427	9.801
Rural vs Urban	1	-0.1935	0.7343	0.824	0.269	2.520
Education						
No education vs Higher	4	16.2762	0.9992	>999.999	<0.001	>999.999
No education vs Higher	3	16.2074	0.9990	>999.999	<0.001	>999.999
No education vs Higher	1	16.5895	0.9982	>999.999	<0.001	>999.999
Secondary vs Higher	4	14.7603	0.9954	>999.999	<0.001	>999.999
Secondary vs Higher	3	16.1808	0.9946	>999.999	<0.001	>999.999
Secondary vs Higher	1	-0.6484	0.3996	0.523	0.116	2.364

Annex 20 - The results of multinomial logistic regression. Living together. Uzbekistan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	49.9614	0.9929	>999.999	<0.001	>999.999
Kazakhs vs Russians	3	36.4224	0.9961	>999.999	<0.001	>999.999
Kazakhs vs Russians	1	-1.2923	0.1773	0.275	0.042	1.795
Uzbeks vs Russians	4	15.9674	0.9971	>999.999	<0.001	>999.999
Uzbeks vs Russians	3	17.5536	0.9975	>999.999	<0.001	>999.999
Uzbeks vs Russians	1	-1.2165	0.0972	0.296	0.070	1.248
Other(in UZB) vs Russians	4	17.4928	0.9966	>999.999	<0.001	>999.999
Other(in UZB) vs Russians	3	17.2903	0.9976	>999.999	<0.001	>999.999
Other(in UZB) vs Russians	1	-0.6612	0.3891	0.516	0.115	2.325
Place of residence						
Rural vs Urban	4	16.8503	0.9953	>999.999	<0.001	>999.999
Rural vs Urban	3	1.3270	0.5910	3.77	0.030	476.932
Rural vs Urban	1	-1.0728	0.3793	0.342	0.031	3.739
Education						
Secondary vs Higher	4	-17.9952	0.9947	<0.001	<0.001	>999.999
Secondary vs Higher	3	-2.0003	0.1744	0.135	0.008	2.426
Secondary vs Higher	1	-0.4235	0.5214	0.655	0.179	2.389

Annex 21 – The results of multinomial logistic regression. Living together. Ukraine

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	0.6741	0.3363	1.962	0.497	7.754
Rural vs Urban	3	0.4665	0.3892	1.594	0.551	4.611
Rural vs Urban	1	-0.6353	0.0297	0.530	0.299	0.939
Education						
Primary vs Higher	4	-12.6167	0.9974	<0.001	<0.001	>999.999
Primary vs Higher	3	1.6345	0.2788	5.127	0.266	98.774
Primary vs Higher	1	-1.2330	0.3475	0.291	0.022	3.816
Secondary vs Higher	4	2.0231	0.0598	7.562	0.920	62.181
Secondary vs Higher	3	1.2029	0.0791	3.330	0.869	12.755
Secondary vs Higher	1	-0.3265	0.2883	0.721	0.395	1.318

Annex 22 – The results of multinomial logistic regression. Widowed. Kazakhstan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	1.0127	0.0355	2.753	1.071	7.077
Kazakhs vs Russians	3	0.2067	0.5998	1.230	0.568	2.662
Kazakhs vs Russians	1	-0.1872	0.5417	0.829	0.455	1.513
Ukrainians vs Russians	4	0.3348	0.6982	1.398	0.257	7.591
Ukrainians vs Russians	3	-0.2544	0.7448	0.775	0.168	3.586
Ukrainians vs Russians	1	-0.0180	0.9750	0.982	0.319	3.026
Other(in KAZ) vs Russians	4	0.3500	0.6643	1.419	0.292	6.893
Other(in KAZ) vs Russians	3	0.1535	0.7880	1.166	0.381	3.569
Other(in KAZ) vs Russians	1	0.0220	0.9591	1.022	0.441	2.368
Place of residence						
Rural vs Urban	4	1.8216	<.0001	6.181	2.614	14.618
Rural vs Urban	3	0.6406	0.0672	1.898	0.956	3.768
Rural vs Urban	1	-0.1332	0.6390	0.875	0.502	1.527
Education						
Primary vs Higher	4	14.7477	0.9816	>999.999	<0.001	>999.999
Primary vs Higher	3	1.0259	0.5167	2.790	0.126	61.950
Primary vs Higher	1	-0.1839	0.9009	0.832	0.046	15.024
Secondary vs Higher	4	14.6076	0.9817	>999.999	<0.001	>999.999
Secondary vs Higher	3	1.1103	0.0998	3.035	0.809	11.391
Secondary vs Higher	1	-0.2380	0.5209	0.788	0.381	1.630

Annex 23 – The results of multinomial logistic regression. Widowed. Uzbekistan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	2.3330	0.0130	10.309	1.635	64.996
Kazakhs vs Russians	3	1.3206	0.1770	3.746	0.551	25.477
Kazakhs vs Russians	1	-0.1667	0.8132	0.846	0.212	3.373
Ukrainians vs Russians	4	-12.8378	0.9864	<0.001	<0.001	>999.999
Ukrainians vs Russians	3	-13.1616	0.9897	<0.001	<0.001	>999.999
Ukrainians vs Russians	1	-0.2661	0.8127	0.766	0.085	6.919
Uzbeks vs Russians	4	1.6515	0.0509	5.215	0.993	27.373
Uzbeks vs Russians	3	1.3097	0.1236	3.705	0.699	19.626
Uzbeks vs Russians	1	-0.2098	0.6963	0.811	0.283	2.325
Other(in UZB) vs Russians	4	-0.0273	0.9811	0.973	0.102	9.328
Other(in UZB) vs Russians	3	0.4469	0.6763	1.563	0.192	12.737
Other(in UZB) vs Russians	1	-0.0048	0.9944	0.995	0.260	3.813
Place of residence						
Rural vs Urban	4	0.4293	0.2194	1.536	0.774	3.048
Rural vs Urban	3	0.2535	0.5165	1.288	0.599	2.771
Rural vs Urban	1	-0.0759	0.8314	0.927	0.461	1.865
Education						
Secondary vs Higher	4	0.5034	0.3094	1.654	0.627	4.366
Secondary vs Higher	3	-0.2197	0.6768	0.803	0.286	2.255
Secondary vs Higher	1	0.0091	0.9841	1.009	0.412	2.469

Annex 24 – The results of multinomial logistic regression. Widowed. Ukraine

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	0.8339	0.1266	2.302	0.790	6.711
Rural vs Urban	3	0.3499	0.3467	1.419	0.685	2.941
Rural vs Urban	1	-0.1332	0.5689	0.875	0.554	1.384
Education						
Secondary vs Higher	4	1.3586	0.0883	3.891	0.816	18.561
Secondary vs Higher	3	0.1925	0.6240	1.212	0.561	2.618
Secondary vs Higher	1	-0.2811	0.2282	0.755	0.478	1.193

Annex 25 – The results of multinomial logistic regression. Divorced. Kazakhstan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	0.1247	0.8377	1.133	0.344	3.735
Kazakhs vs Russians	3	0.6259	0.0879	1.870	0.911	3.837
Kazakhs vs Russians	1	-0.0187	0.9343	0.981	0.629	1.531
Ukrainians vs Russians	4	1.5273	0.0690	4.606	0.888	23.889
Ukrainians vs Russians	3	-0.6616	0.5504	0.516	0.059	4.525
Ukrainians vs Russians	1	-0.3197	0.5141	0.726	0.278	1.897
Other(in KAZ) vs Russians	4	1.0411	0.0986	2.832	0.824	9.741
Other(in KAZ) vs Russians	3	0.7216	0.1241	2.058	0.820	5.162
Other(in KAZ) vs Russians	1	0.2345	0.4553	1.264	0.683	2.340
Place of residence						
Rural vs Urban	4	0.4590	0.3922	1.583	0.553	4.528
Rural vs Urban	3	0.4467	0.1956	1.563	0.795	3.074
Rural vs Urban	1	-0.3800	0.1116	0.684	0.428	1.092
Education						
Primary vs Higher	4	-13.4948	0.9957	<0.001	<0.001	>999.999
Primary vs Higher	3	-13.7520	0.9925	<0.001	<0.001	>999.999
Primary vs Higher	1	0.2510	0.8410	1.285	0.111	14.931
Secondary vs Higher	4	0.3842	0.5670	1.468	0.394	5.471
Secondary vs Higher	3	0.1805	0.6529	1.198	0.546	2.630
Secondary vs Higher	1	-0.3372	0.1663	0.714	0.443	1.151

Annex 26 – The results of multinomial logistic regression. Divorced. Uzbekistan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	18.0089	0.9926	>999.999	<0.001	>999.999
Kazakhs vs Russians	3	2.1942	0.1099	8.973	0.609	132.16
Kazakhs vs Russians	1	-0.6249	0.4794	0.535	0.095	3.025
Uzbeks vs Russians	4	15.6560	0.9936	>999.999	<0.001	>999.999
Uzbeks vs Russians	3	1.5209	0.1881	4.577	0.475	44.075
Uzbeks vs Russians	1	-0.5380	0.3122	0.584	0.206	1.658
Other(in UZB) vs Russians	4	16.8770	0.9931	>999.999	<0.001	>999.999
Other(in UZB) vs Russians	3	1.3992	0.2332	4.052	0.406	40.426
Other(in UZB) vs Russians	1	-0.6667	0.2282	0.513	0.174	1.518
Place of residence						
Rural vs Urban	4	1.9443	0.0051	6.989	1.792	27.25
Rural vs Urban	3	0.3158	0.5949	1.371	0.428	4.393
Rural vs Urban	1	-0.1780	0.6872	0.837	0.352	1.991
Education						
Secondary vs Higher	4	0.7081	0.4031	2.030	0.386	10.676
Secondary vs Higher	3	0.3626	0.5939	1.437	0.379	5.451
Secondary vs Higher	1	-0.2624	0.5521	0.769	0.324	1.827

Annex 27 – The results of multinomial logistic regression. Divorced. Ukraine

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	0.0521	0.9247	1.053	0.357	3.106
Rural vs Urban	3	0.5132	0.1278	1.671	0.863	3.234
Rural vs Urban	1	-0.4283	0.0098	0.652	0.471	0.902
Education						
Secondary vs Higher	4	2.0473	0.0089	7.747	1.672	35.897
Secondary vs Higher	3	0.7261	0.0383	2.067	1.040	4.108
Secondary vs Higher	1	-0.4003	0.0116	0.670	0.491	0.914

Annex 28 – The results of multinomial logistic regression. Not living together. Kazakhstan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	15.3637	0.9930	>999.999	<0.001	>999.999
Kazakhs vs Russians	3	1.5038	0.1266	4.499	0.653	30.979
Kazakhs vs Russians	1	-0.4473	0.4345	0.639	0.208	1.963
Ukrainians vs Russians	4	12.9435	0.9993	>999.999	<0.001	>999.999
Ukrainians vs Russians	3	-14.0168	0.9988	<0.001	<0.001	>999.999
Ukrainians vs Russians	1	0.1289	0.9276	1.138	0.070	18.365
Other (in KAZ) vs Russians	4	15.4367	0.9930	>999.999	<0.001	>999.999
Other (in KAZ) vs Russians	3	1.3353	0.4108	3.801	0.158	91.571
Other (in KAZ) vs Russians	1	-0.0462	0.9614	0.955	0.147	6.204
Place of residence						
Rural vs Urban	4	2.2272	0.0828	9.273	0.749	114.812
Rural vs Urban	3	-0.3086	0.7328	0.734	0.125	4.319
Rural vs Urban	1	-0.0548	0.9243	0.947	0.306	2.932
Education						
Secondary vs Higher	4	13.5980	0.9957	>999.999	<0.001	>999.999
Secondary vs Higher	3	0.7359	0.5980	2.087	0.135	32.181
Secondary vs Higher	1	-1.4614	0.0562	0.232	0.052	1.039

Annex 29 – The results of multinomial logistic regression. Not living together. Uzbekistan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	4	17.8554	0.9996	>999.999	<0.001	>999.999
Kazakhs vs Russians	3	0.2877	1.0000	1.333	<0.001	>999.999
Kazakhs vs Russians	1	19.2208	0.9994	>999.999	<0.001	>999.999
Uzbeks vs Russians	4	35.6453	0.9991	>999.999	<0.001	>999.999
Uzbeks vs Russians	3	-0.1178	1.0000	0.889	<0.001	>999.999
Uzbeks vs Russians	1	38.4415	0.9985	>999.999	<0.001	>999.999
Other(in UZB) vs Russians	4	17.8554	0.9993	>999.999	<0.001	>999.999
Other(in UZB) vs Russians	3	0.2877	1.0000	1.333	<0.001	>999.999
Other(in UZB) vs Russians	1	19.2208	0.9990	>999.999	<0.001	>999.999
Place of residence						
Rural vs Urban	4	-17.7899	0.9991	<0.001	<0.001	>999.999
Rural vs Urban	3	0.4055	1.0000	1.500	<0.001	>999.999
Rural vs Urban	1	-19.2208	0.9988	<0.001	<0.001	>999.999

Annex 30 – The results of multinomial logistic regression. Not living together. Ukraine

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	0.0520	0.9545	1.053	0.177	6.287
Rural vs Urban	3	0.8458	0.4816	2.330	0.221	24.573
Rural vs Urban	1	-0.7065	0.1046	0.493	0.210	1.158
Education						
Secondary vs Higher	4	17.2355	0.9923	>999.999	<0.001	>999.999
Secondary vs Higher	3	1.6583	0.1758	5.250	0.476	57.911
Secondary vs Higher	1	0.0843	0.8527	1.088	0.447	2.650

Annex 31 – The results of multinomial logistic regression. Never married. Kazakhstan

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Ethnicity						
Kazakhs vs Russians	3	-16.2074	0.9993	<0.001	<0.001	>999.999
Kazakhs vs Russians	1	-17.4134	0.9986	<0.001	<0.001	>999.999
Ukrainians vs Russians	3	-17.2717	0.9997	<0.001	<0.001	>999.999
Ukrainians vs Russians	1	-17.8698	0.9994	<0.001	<0.001	>999.999
Other(in KAZ) vs Russians	3	16.9932	0.9992	>999.999	<0.001	>999.999
Other(in KAZ) vs Russians	1	-18.0811	0.9985	<0.001	<0.001	>999.999
Place of residence						
Rural vs Urban	3	-17.3103	0.9970	<0.001	<0.001	>999.999
Rural vs Urban	1	-1.7560	0.1980	0.173	0.012	2.503
Education						
Primary vs Higher	3	10.5167	0.9999	>999.999	<0.001	>999.999
Primary vs Higher	1	-20.0559	0.9997	<0.001	<0.001	>999.999
Secondary vs Higher	3	14.2226	0.9991	>999.999	<0.001	>999.999
Secondary vs Higher	1	-19.1676	0.9983	<0.001	<0.001	>999.999

Annex 32 - The results of multinomial logistic regression. Never married. Ukraine

Effect	Live birth order	Estimations	P-value	Odds Ratio	95% Wald Confidence Limits	
Place of residence						
Rural vs Urban	4	17.2867	0.9979	>999.999	<0.001	>999.999
Rural vs Urban	3	17.2867	0.9979	>999.999	<0.001	>999.999
Rural vs Urban	1	-0.3759	0.7348	0.687	0.078	6.046
Education						
Secondary vs Higher	4	17.7336	0.9979	>999.999	<0.001	>999.999
Secondary vs Higher	3	17.7336	0.9979	>999.999	<0.001	>999.999
Secondary vs Higher	1	-0.3613	0.7534	0.697	0.073	6.640

Annex III

Samples of DHS questionnaire

Annex 33 – Respondent's background

SECTION 1. RESPONDENT'S BACKGROUND

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is _____ and I am working with (NAME OF ORGANIZATION). We are conducting a national survey about the health of women and children. We would very much appreciate your participation in this survey. I would like to ask you about your health (and the health of your children). This information will help the government to plan health services. The survey usually takes between 20 and 45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.[1]

At this time, do you want to ask me anything about the survey?
May I begin the interview now?

Signature of interviewer: _____ Date: _____

RESPONDENT AGREES TO BE INTERVIEWED . . 1 RESPONDENT DOES NOT AGREE TO BE INTERVIEWED . 2 →END

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOUR . . . . . [ ][ ] MINUTES . . . . . [ ][ ]	
102	First I would like to ask some questions about you and your household. For most of the time until you were 12 years old, did you live in a city, in a town, or in the countryside?	CITY . . . . . 1 TOWN . . . . . 2 COUNTRYSIDE 3	
103	How long have you been living continuously in (NAME OF CURRENT PLACE OF RESIDENCE)? IF LESS THAN ONE YEAR, RECORD '00' YEARS.	YEARS . . . . . [ ][ ] ALWAYS . . . . . 95 VISITOR 96	→105
104	Just before you moved here, did you live in a city, in a town, or in the countryside?	CITY . . . . . 1 TOWN . . . . . 2 COUNTRYSIDE 3	
105	In what month and year were you born?	MONTH . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 YEAR . . . . . [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
106	How old were you at your last birthday? COMPARE AND CORRECT 105 AND/OR 106 IF INCONSISTENT.	AGE IN COMPLETED YEARS [ ][ ]	
107	Have you ever attended school?	YES . . . . . 1 NO 2	→111
108	What is the highest level of school you attended: primary, secondary, or higher?[2]	PRIMARY . . . . . 1 SECONDARY . . . . . 2 HIGHER 3	
109	What is the highest (grade/form/year) you completed at that level?[2]	GRADE . . . . . [ ][ ]	

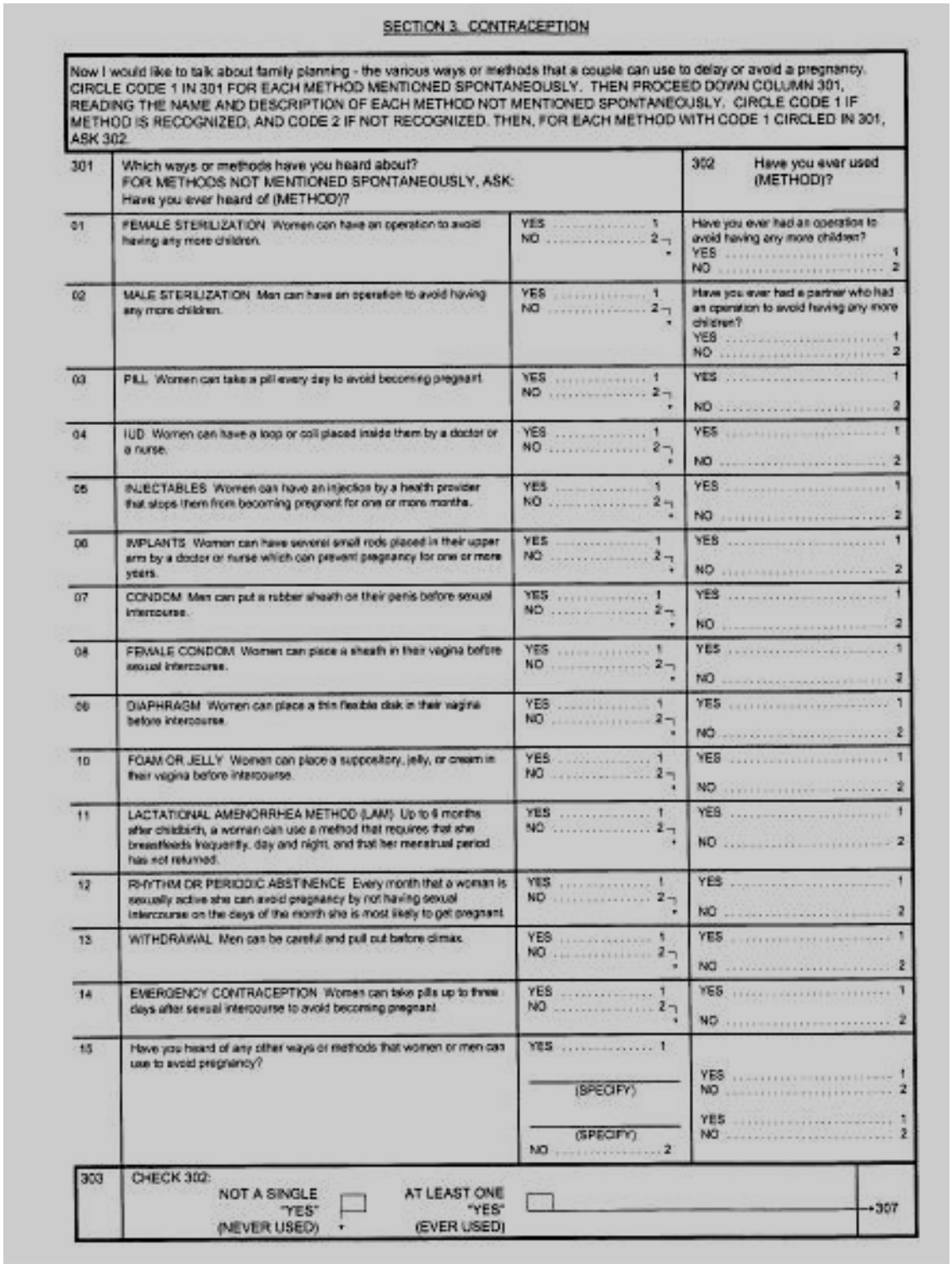
[1] Wording of this paragraph should be modified in countries where participation is legally required.
[2] Revise according to the local education system.

Annex 34 - Reproduction

SECTION 2: REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	Now I would like to ask about all the births you have had during your life. Have you ever given birth?	YES ..... 1 NO 2	→206
202	Do you have any sons or daughters to whom you have given birth who are now living with you?	YES ..... 1 NO 2	→204
203	How many sons live with you? And how many daughters live with you? IF NONE, RECORD '00'.	SONS AT HOME ..... DAUGHTERS AT HOME	
204	Do you have any sons or daughters to whom you have given birth who are alive but do not live with you?	YES ..... 1 NO 2	→206
205	How many sons are alive but do not live with you? And how many daughters are alive but do not live with you? IF NONE, RECORD '00'.	SONS ELSEWHERE ..... DAUGHTERS ELSEWHERE .	
206	Have you ever given birth to a boy or girl who was born alive but later died? IF NO, PROBE: Any baby who cried or showed signs of life but did not survive?	YES ..... 1 NO 2	→208
207	How many boys have died? And how many girls have died? IF NONE, RECORD '00'.	BOYS DEAD ..... GIRLS DEAD	
208	SUM ANSWERS TO 203, 205, AND 207, AND ENTER TOTAL. IF NONE, RECORD '00'.	TOTAL	
209	CHECK 208: Just to make sure that I have this right: you have had in TOTAL _____ births during your life. Is that correct? YES ☐ NO ☐ → PROBE AND CORRECT 201-208 AS NECESSARY.		
210	CHECK 208: ONE OR MORE BIRTHS ☐ NO BIRTHS ☐		→226

Annex 35 - Contraception



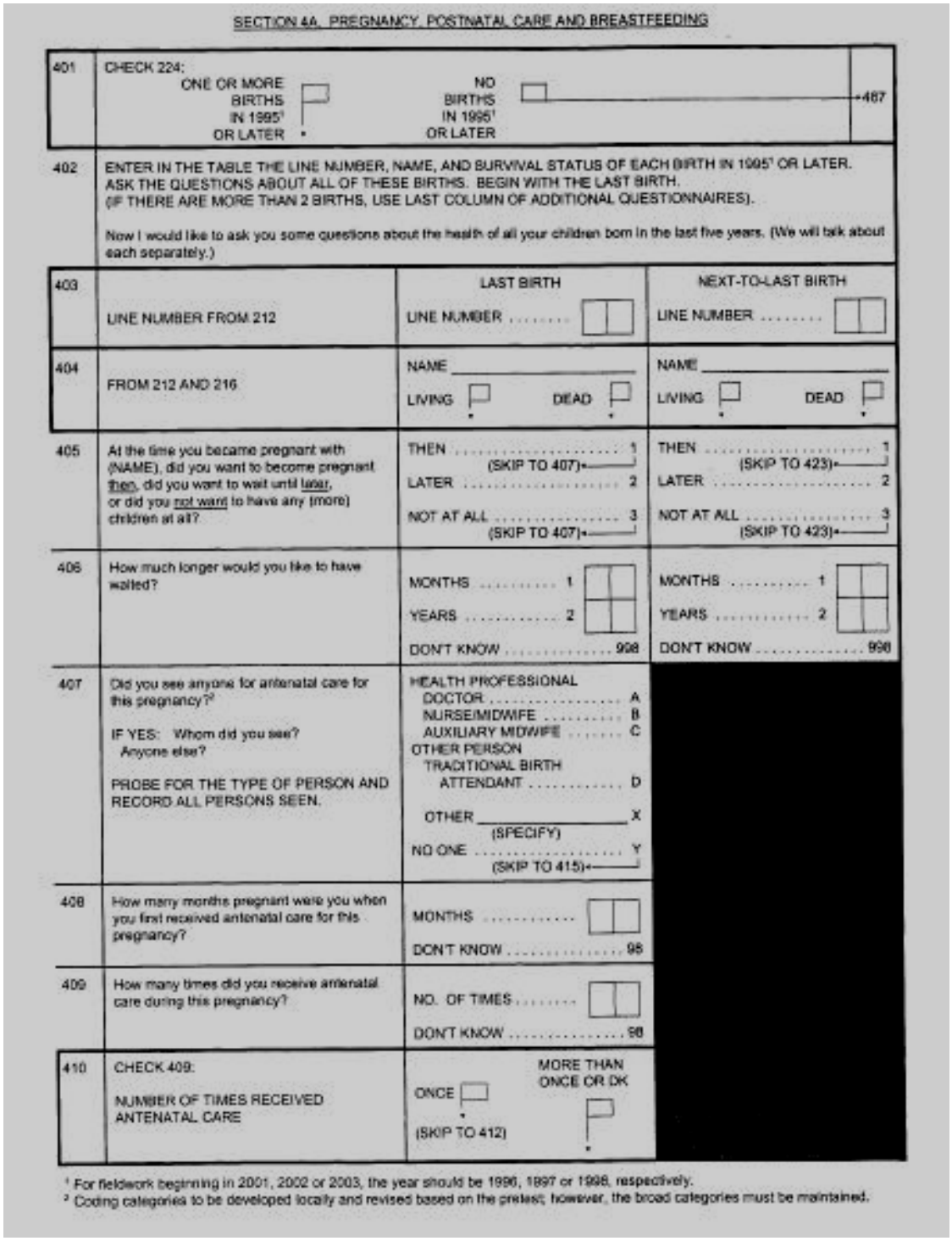
SECTION 3. CONTRACEPTION

Now I would like to talk about family planning - the various ways or methods that a couple can use to delay or avoid a pregnancy. CIRCLE CODE 1 IN 301 FOR EACH METHOD MENTIONED SPONTANEOUSLY. THEN PROCEED DOWN COLUMN 301, READING THE NAME AND DESCRIPTION OF EACH METHOD NOT MENTIONED SPONTANEOUSLY. CIRCLE CODE 1 IF METHOD IS RECOGNIZED, AND CODE 2 IF NOT RECOGNIZED. THEN, FOR EACH METHOD WITH CODE 1 CIRCLED IN 301, ASK 302.

301	Which ways or methods have you heard about? FOR METHODS NOT MENTIONED SPONTANEOUSLY, ASK: Have you ever heard of (METHOD)?		302 Have you ever used (METHOD)?
01	FEMALE STERILIZATION Women can have an operation to avoid having any more children.	YES ... 1 NO ... 2	Have you ever had an operation to avoid having any more children? YES ... 1 NO ... 2
02	MALE STERILIZATION Men can have an operation to avoid having any more children.	YES ... 1 NO ... 2	Have you ever had a partner who had an operation to avoid having any more children? YES ... 1 NO ... 2
03	PILL Women can take a pill every day to avoid becoming pregnant.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
04	IUD Women can have a loop or coil placed inside them by a doctor or a nurse.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
05	INJECTABLES Women can have an injection by a health provider that stops them from becoming pregnant for one or more months.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
06	IMPLANTS Women can have several small rods placed in their upper arm by a doctor or nurse which can prevent pregnancy for one or more years.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
07	CONDOM Men can put a rubber sheath on their penis before sexual intercourse.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
08	FEMALE CONDOM Women can place a sheath in their vagina before sexual intercourse.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
09	DIAPHRAGM Women can place a thin flexible disk in their vagina before intercourse.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
10	FOAM OR JELLY Women can place a suppository, jelly, or cream in their vagina before intercourse.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
11	LACTATIONAL AMENORRHEA METHOD (LAM) Up to 6 months after childbirth, a woman can use a method that requires that she breastfeeds frequently, day and night, and that her menstrual period has not returned.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
12	RHYTHM OR PERIODIC ABSTINENCE Every month that a woman is sexually active she can avoid pregnancy by not having sexual intercourse on the days of the month she is most likely to get pregnant.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
13	WITHDRAWAL Men can be careful and pull out before climax.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
14	EMERGENCY CONTRACEPTION Women can take pills up to three days after sexual intercourse to avoid becoming pregnant.	YES ... 1 NO ... 2	YES ... 1 NO ... 2
15	Have you heard of any other ways or methods that women or men can use to avoid pregnancy?	YES ... 1 _____ (SPECIFY) _____ (SPECIFY) NO ... 2	YES ... 1 NO ... 2 YES ... 1 NO ... 2

303	CHECK 302:			
	NOT A SINGLE "YES" (NEVER USED) ☐ *	AT LEAST ONE "YES" (EVER USED) ☐	→ 307

Annex 36 – Pregnancy

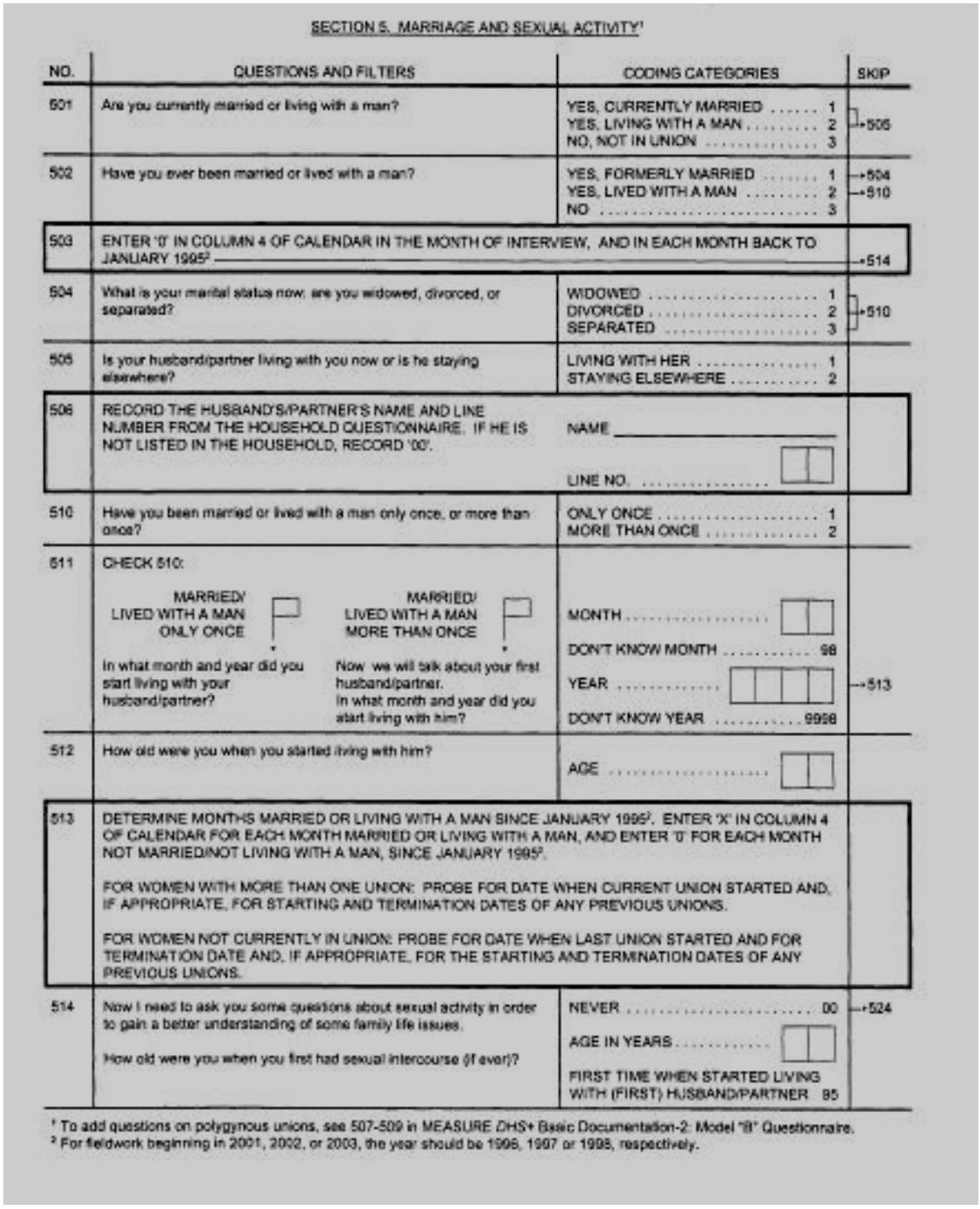


SECTION 4A. PREGNANCY, POSTNATAL CARE AND BREASTFEEDING

401	CHECK 224: ONE OR MORE BIRTHS IN 1995[1] OR LATER →	NO BIRTHS IN 1995[1] OR LATER →	→407
402	ENTER IN THE TABLE THE LINE NUMBER, NAME, AND SURVIVAL STATUS OF EACH BIRTH IN 1995[1] OR LATER. ASK THE QUESTIONS ABOUT ALL OF THESE BIRTHS. BEGIN WITH THE LAST BIRTH. (IF THERE ARE MORE THAN 2 BIRTHS, USE LAST COLUMN OF ADDITIONAL QUESTIONNAIRES). Now I would like to ask you some questions about the health of all your children born in the last five years. (We will talk about each separately.)		
403	LINE NUMBER FROM 212	LAST BIRTH LINE NUMBER	NEXT-TO-LAST BIRTH LINE NUMBER .....
404	FROM 212 AND 216	NAME _____ LIVING → DEAD →	NAME _____ LIVING → DEAD →
405	At the time you became pregnant with (NAME), did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all?	THEN ..... 1 (SKIP TO 407)→ LATER ..... 2 NOT AT ALL ..... 3 (SKIP TO 407)→	THEN ..... 1 (SKIP TO 423)→ LATER ..... 2 NOT AT ALL ..... 3 (SKIP TO 423)→
406	How much longer would you like to have waited?	MONTHS ..... 1 YEARS ..... 2 DON'T KNOW 998	MONTHS ..... 1 YEARS ..... 2 DON'T KNOW 998
407	Did you see anyone for antenatal care for this pregnancy?[2] IF YES: Whom did you see? Anyone else? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	HEALTH PROFESSIONAL DOCTOR ..... A NURSE/MIDWIFE ..... B AUXILIARY MIDWIFE ..... C OTHER PERSON TRADITIONAL BIRTH ATTENDANT ..... D OTHER _____ (SPECIFY) ..... X NO ONE ..... Y (SKIP TO 415)→	
408	How many months pregnant were you when you first received antenatal care for this pregnancy?	MONTHS ..... DON'T KNOW 98	
409	How many times did you receive antenatal care during this pregnancy?	NO. OF TIMES ..... DON'T KNOW 98	
410	CHECK 409: NUMBER OF TIMES RECEIVED ANTENATAL CARE	ONCE → (SKIP TO 412) MORE THAN ONCE OR DK →	

[1] For fieldwork beginning in 2001, 2002 or 2003, the year should be 1996, 1997 or 1998, respectively.
[2] Coding categories to be developed locally and revised based on the pretest; however, the broad categories must be maintained.

Annex 37 – Marriage and sexual activity

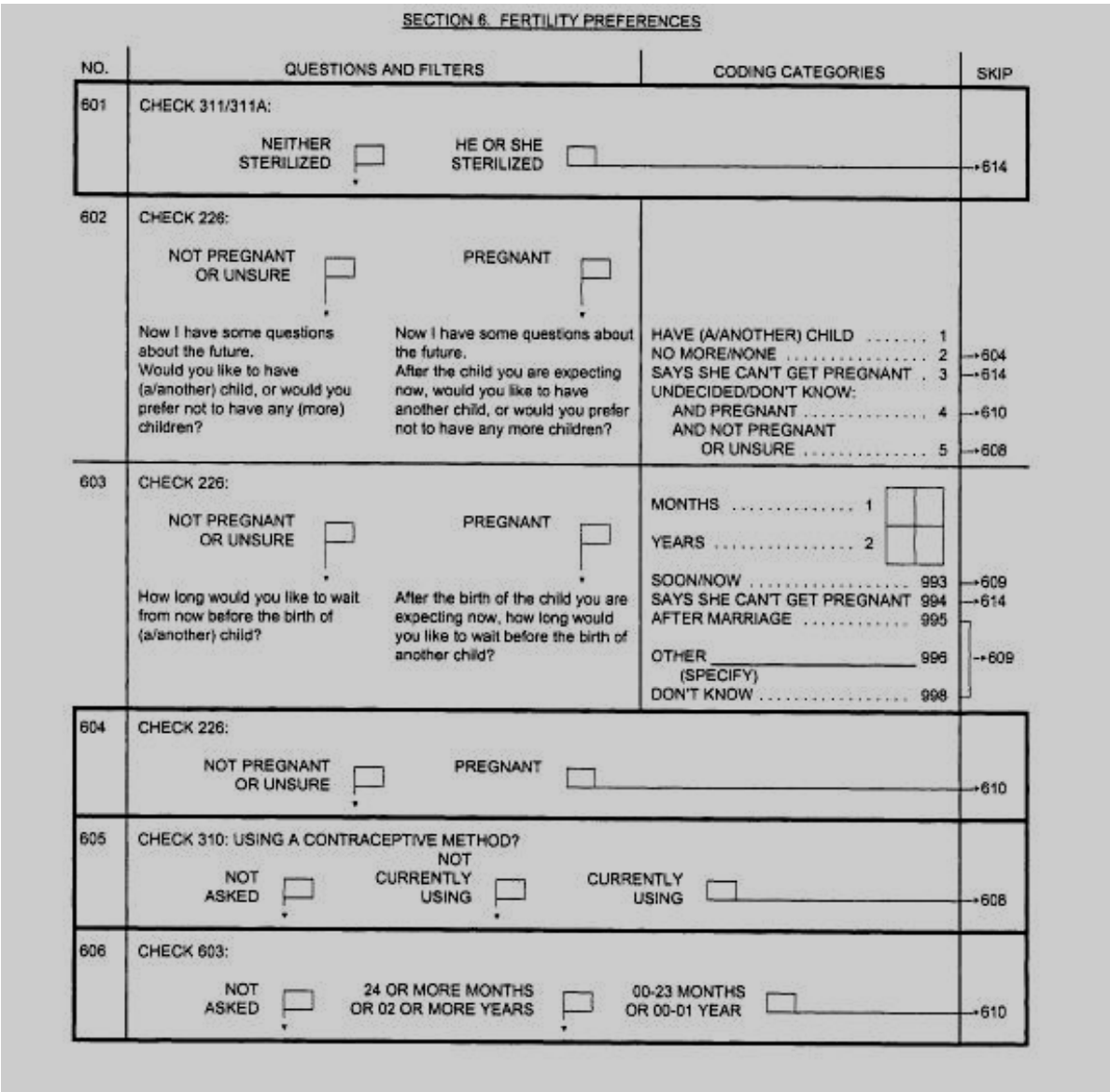


SECTION 5. MARRIAGE AND SEXUAL ACTIVITY[1]

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	Are you currently married or living with a man?	YES, CURRENTLY MARRIED ..... 1 YES, LIVING WITH A MAN ..... 2 NO, NOT IN UNION 3	→505
502	Have you ever been married or lived with a man?	YES, FORMERLY MARRIED ..... 1 YES, LIVED WITH A MAN ..... 2 NO 3	→504 →510
503	ENTER '0' IN COLUMN 4 OF CALENDAR IN THE MONTH OF INTERVIEW, AND IN EACH MONTH BACK TO JANUARY 1995[2]		→514
504	What is your marital status now: are you widowed, divorced, or separated?	WIDOWED ..... 1 DIVORCED ..... 2 SEPARATED 3	→510
505	Is your husband/partner living with you now or is he staying elsewhere?	LIVING WITH HER ..... 1 STAYING ELSEWHERE 2	
506	RECORD THE HUSBAND'S/PARTNER'S NAME AND LINE NUMBER FROM THE HOUSEHOLD QUESTIONNAIRE. IF HE IS NOT LISTED IN THE HOUSEHOLD, RECORD '00'.	NAME _____ LINE NO.	
510	Have you been married or lived with a man only once, or more than once?	ONLY ONCE ..... 1 MORE THAN ONCE 2	
511	CHECK 510: MARRIED/ LIVED WITH A MAN ONLY ONCE: In what month and year did you start living with your husband/partner? MARRIED/ LIVED WITH A MAN MORE THAN ONCE: Now we will talk about your first husband/partner. In what month and year did you start living with him?	MONTH ..... DON'T KNOW MONTH ..... 98 YEAR ..... DON'T KNOW YEAR 9998	→513
512	How old were you when you started living with him?	AGE	
513	DETERMINE MONTHS MARRIED OR LIVING WITH A MAN SINCE JANUARY 1995[2]. ENTER 'X' IN COLUMN 4 OF CALENDAR FOR EACH MONTH MARRIED OR LIVING WITH A MAN, AND ENTER '0' FOR EACH MONTH NOT MARRIED/NOT LIVING WITH A MAN, SINCE JANUARY 1995[2]. FOR WOMEN WITH MORE THAN ONE UNION: PROBE FOR DATE WHEN CURRENT UNION STARTED AND, IF APPROPRIATE, FOR STARTING AND TERMINATION DATES OF ANY PREVIOUS UNIONS. FOR WOMEN NOT CURRENTLY IN UNION: PROBE FOR DATE WHEN LAST UNION STARTED AND FOR TERMINATION DATE AND, IF APPROPRIATE, FOR THE STARTING AND TERMINATION DATES OF ANY PREVIOUS UNIONS.		
514	Now I need to ask you some questions about sexual activity in order to gain a better understanding of some family life issues. How old were you when you first had sexual intercourse (if ever)?	NEVER ..... 00 AGE IN YEARS ..... FIRST TIME WHEN STARTED LIVING WITH (FIRST) HUSBAND/PARTNER 95	→524

[1] To add questions on polygynous unions, see 507-509 in MEASURE DHS+ Basic Documentation-2: Model "B" Questionnaire.
[2] For fieldwork beginning in 2001, 2002, or 2003, the year should be 1996, 1997 or 1998, respectively.

Annex 38 – Fertility preferences



SECTION 6. FERTILITY PREFERENCES

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
601	CHECK 311/311A: NEITHER STERILIZED ☐ HE OR SHE STERILIZED ☐		→614
602	CHECK 226: NOT PREGNANT OR UNSURE ☐ PREGNANT ☐ Now I have some questions about the future. Would you like to have (a/another) child, or would you prefer not to have any (more) children? Now I have some questions about the future. After the child you are expecting now, would you like to have another child, or would you prefer not to have any more children?	HAVE (A/ANOTHER) CHILD ..... 1 NO MORE/NONE ..... 2 SAYS SHE CAN'T GET PREGNANT . 3 UNDECIDED/DON'T KNOW: AND PREGNANT ..... 4 AND NOT PREGNANT OR UNSURE 5	→604 →614 →610 →608
603	CHECK 226: NOT PREGNANT OR UNSURE ☐ PREGNANT ☐ How long would you like to wait from now before the birth of (a/another) child? After the birth of the child you are expecting now, how long would you like to wait before the birth of another child?	MONTHS ..... 1 ☐☐ YEARS ..... 2 ☐☐ SOON/NOW ..... 993 SAYS SHE CAN'T GET PREGNANT 994 AFTER MARRIAGE ..... 995 OTHER _____ 996 (SPECIFY) DON'T KNOW 998	→609 →614 →609
604	CHECK 226: NOT PREGNANT OR UNSURE ☐ PREGNANT ☐		→610
605	CHECK 310: USING A CONTRACEPTIVE METHOD? NOT ASKED ☐ NOT CURRENTLY USING ☐ CURRENTLY USING ☐		→608
606	CHECK 603: NOT ASKED ☐ 24 OR MORE MONTHS OR 02 OR MORE YEARS ☐ 00-23 MONTHS OR 00-01 YEAR ☐		→610